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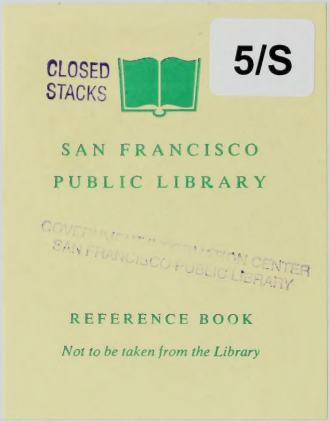

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A REPORT TO
THE BOARD OF SUPERVISORS
CITY AND COUNTY OF SAN FRANCISCO

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MUNICIPAL RAILWAY OF SAN FRANCISCO
ECONOMIC AND ORGANIZATIONAL FEATURES

ARTHUR C. JENKINS, CONSULTING ENGINEER
SAN FRANCISCO, CALIFORNIA
APRIL 20, 1949

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A Report On

ECONOMIC AND ORGANIZATIONAL FEATURES

Of The

MUNICIPAL RAILWAY OF SAN FRANCISCO

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April 20, 1949

The Honorable
The Board of Supervisors
City and County of San Francisco
City Hall
San Francisco, California

Gentlemen:

In accordance with the provisions of agreement between the City and County of San Francisco and the undersigned, as approved by The Board of Supervisors, Resolution No. 8138, there is transmitted herewith a report setting forth the findings of an analysis of the existing organization, personnel and work program of each office and subdivision of the Municipal Railway of San Francisco, together with recommendations for changes therein.

Although a summary of findings and recommendations has been provided in the last chapter of the report, it is respectfully suggested that they be read in conjunction with the supporting data and the conclusions contained in the corresponding chapters.

Respectfully submitted,

Arthur C. Jenkins

ARTHUR C. JENKINS

A REPORT ON
MUNICIPAL RAILWAY OF SAN FRANCISCO
ECONOMIC AND ORGANIZATIONAL FEATURES

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A REPORT ON
MUNICIPAL RAILWAY OF SAN FRANCISCO
ECONOMIC AND ORGANIZATIONAL FEATURES

FOREWORD

In view of the nature of this present analysis, it is mandatory that the findings be frankly stated if the basis for the desired results is to be convincingly established. In proposing changes calculated to bring the organization and operation of Municipal Railway into proper relationship with the importance of the business conducted, and to bring about the greatest degree of benefit to the public through promoting the highest possible standard of service at a minimum reasonable rate of fare, a report of this nature, dealing primarily with organization and personnel, cannot possibly avoid reference to individual positions and work programs if it is to be constructive. Analyses of personnel and organizational features of privately owned industries are usually considered as confidential and not for public distribution. It is recommended that similar treatment be accorded this document.

It is obvious that there are certain deficiencies existing in the present operation, otherwise there would not be the extent of public criticism, the number of recent private and other investigations, and the request by the Board of Supervisors that an inquiry analysis be made. It is equally obvious that to carry out the desires of the Board, it is mandatory that all elements of operations and facilities, as well as organization and personnel, be investigated to determine the causes of the deficiencies and that the findings be presented in true perspective, if this report is to be anything other than an innocuous document and an idle gesture. Upon this premise and with these principles in mind the investigation has been conducted.

In selecting personnel to assist in the analysis, great care has been exercised to obtain the services of qualified individuals who have no personal interest in the outcome and who have not had previous financial or personal connections with the operations that would tend to bias their thinking, and whose points of view are completely impartial. The soundness of the original selection has been proven by the highly commendable results produced by those candidates accepted.

Much of the detailed material required, field observations, physical inspection, and compilation of factual data has been conducted, under direct supervision of the undersigned, by Henry E. Jordan, Bruce W. Campbell, Gordon B. Adams, and Robert P. Utter. All of these men are considered to be eminently qualified by reason of their experience, specialized training and educational backgrounds to perform the special phases of the analysis to which they have been assigned.

Mr. Jordan is a qualified engineer with many years of active experience in large-scale mass transit operations in responsible charge of engineering, maintenance, construction and design of automotive and electrical transportation equipment and facilities, as well as operations.

Mr. Campbell is a qualified engineer who has had many years of experience in economics, rates, research, development and financial analysis work on large privately owned mass transportation properties and as an engineer on the staff of the Public Utilities Commission of the State of California (formerly the Railroad Commission).

Mr. Adams is a newcomer to the transportation engineering field in this country, but has had valuable experience in mass transit operations in London and other cities of England, both during war-time devastation and in peace-time. He has brought to this project a fresh viewpoint and an outside approach that is considered of great value in a survey of this nature.

Mr. Utter, who holds a Master's degree in Management and Personnel Administration, due to his specialized experience and education in personnel and organizational work, both in civil and military life, has contributed most valuably to the progress of the analysis.

It is desired at this point to acknowledge with appreciation the assistance and cooperation extended to the analyzing group by personnel and officials of the Municipal Railway and the various other related offices and departments contacted.

It has been encouraging to observe a manifest desire of obviously sincere intent on behalf of numerous railway employees, to see some form of change that would permit them to perform their duties in a more effective manner and that would lift the cloak of frustration that drapes the shoulders of many otherwise capable and conscientious public servants who, under the present system, are prevented from demonstrating, to the fullest measure, their true capabilities. This attitude of cooperation is commendable in view of the obvious fact that final results of this report might well react adversely to the interests of some of those persons concerned. There was only one instance of direct refusal to supply information desired. This was in connection with individual personnel records of operating employees. The data needed was, however, obtained through other more cumbersome sources.

It is appropriate to give credit to the American Transit Association, the Public Utilities Commission of the State of California and the Bureau of Governmental Research for use of certain material prepared by them, to the Department of Street Railways of the City of Detroit, the Cleveland Transit System and the Seattle Transit System for willing response to informative inquiry, and to Marian Deiterich for the painstaking efforts and skill in supervising the stenographic work and reproduction of the report.

ARTHUR C. JENKINS

PART ONE

BASIC CONSIDERATIONS

A REPORT ON ECONOMIC AND ORGANIZATIONAL FEATURES OF THE MUNICIPAL RAILWAY OF SAN FRANCISCO

CHAPTER I

PRESENT ANALYSIS AND REHABILITATION PROGRAM

AUTHORITY FOR ANALYSIS

By authority of Resolution No. 8138, initiated by the Board of Supervisors of the City and County of San Francisco and approved by the Mayor on November 30, 1948, an agreement, dated December 11, 1948, was drawn up between the City and County of San Francisco and Arthur C. Jenkins, Consulting Engineer, under Contract No. 165, prescribing:

"That the City and County of San Francisco herein contracts with the Consulting Engineer for the purpose of inquiry an analysis and report of the existing organization, personnel and work program of each office and subdivision of the San Francisco Municipal Railway, together with recommendations for physical changes in organization, personnel or work programs. The analysis, report and recommendations shall include the following:

"a. Services rendered and jurisdiction exercised by other utility and general city departments with respect to the San Francisco Municipal Railway;

"b. The mode of procedure in the settlement of accident and damage claims, classifying them and showing by class the number and amounts thereof; and, in connection with such recommendations, emphasis shall be given to organization and procedure for equitable settlement of said claims in the best interests of the City and County of San Francisco;

"c. Operation and maintenance and conducting transportation with particular emphasis on the presently active and the proposed routings, transit equipment and other physical property, and lay-up of transit equipment during off-peak hours, all to the end that equipment may be used to its maximum efficiency, and proper schedules may be maintained;

"d. Finances, including an analysis of costs of administration, supervision, operation, maintenance, provision for accidents and damages and bond service charges and an analysis of revenues and non-operating income, with particular emphasis on the fare structure now in effect or proposed for the future;

"e. The advisability of establishing of a separate transit commission."

Provisions of the agreement required that the analysis should be commenced on the 20th day of December, 1948, and completed on or before the 20th day of April, 1949, with progress reports to be submitted to the Board of Supervisors at the expiration of each thirty days of the survey. Provisions of the agreement have been, as of the date of this report, carried out in all respects and the findings resulting from the analysis are set forth herein.

PURPOSE AND SCOPE OF ANALYSIS

The purpose of this report is to furnish to the Board of Supervisors, in compliance with provisions of the agreement, the results of an analysis of the existing organization, personnel and work program of each office and subdivision of the Municipal Railway of San Francisco, together with recommendations for changes in organization, personnel and work programs, where deemed desirable, and other data relevant thereto. To proceed with such a technical analysis it is necessary that certain basic fundamentals be laid down as the foundation upon which to conduct the investigation and to substantiate the conclusions. For that reason considerable space has been devoted to such underlying principles and concepts as applying to this specialized field.

Although the scope of the analysis was specified in general terms by resolution, it has been necessary in probing those general specifications, to explore numerous related features not specifically named. The scope of analysis has been limited largely to the direct activities of the Municipal Railway and the various city departments that either directly or indirectly participate in some fashion with the railway. The study was presumably to be confined to present practices without extensive study of major projects contemplated for the future, however there is a direct relationship between those projects and the present operations which cannot be completely disassociated without adverse effect upon the principal objective.

It is not the purpose of this report to develop a comprehensive plan of either operations or facilities. To do either would require a much more extensive period of time and appropriation of funds. Much money has already been allotted for the purpose of designing a transportation system for San Francisco as to facilities, routing and equipment. Recommendations in those respects have been made in numerous lengthy reports submitted during the past few years and rehabilitation is in progress to a confusing degree.

To devise a detailed plan of operation and procedure in all of its refinements would involve an exhaustive study of all elements of the intricate operating, maintenance and managerial functions with many complex and extensive cost accounting, time efficiency and individual appraisal studies of efficiency of each of the thousands of employees of the system.

Such extensive work can only be done by a well coordinated complement of administrative personnel, each properly qualified to discharge fully the responsibilities of his office. This report will prescribe the requirements of such an organization and point out the weaknesses that should be corrected. From that point the objective can only be attained by making the necessary changes as recommended, placing the responsibility for each segment of the organization upon the shoulders of properly qualified administrative personnel to carry the program forward in each of the many departments and subdivisions of the system. To correct the deficiencies in their entirety will require a relatively long period of time and cannot be accomplished within the scope of an analysis and report such as this. The primary purpose of this report is to point the way toward correction through establishment of the proper type of basic organization that can proceed expeditiously with the program throughout all departments simultaneously on a basis of uniformity, firmness, and confidence.

Within the limit of time available and in view of the ultimate objective, this analysis has been conducted so as to cover the essential features of the railway to the degree dictated by the relative importance each bears to the total.

The procedure followed has included among other things, careful analysis of pertinent accounting and office records bearing upon the several phases of the problem, interview of most all responsible officials having jurisdiction over the numerous related functions, conduct of extensive field observations and checks of actual conditions of operation, service and work programs, inspection of fixed facilities and equipment, observation of traffic flow and loading, and check of the qualifications and experience of all persons holding positions of authority in the various departments of the Railway and associated offices.

It has not been possible to obtain in writing all of the information that has been collected for the purpose of the analysis. Verbal information emanating from responsible sources has been considered dependable and written verification has not been demanded. Discussions have been held with and opinions obtained from numerous individuals associated with the operation who, for reasons that are obvious, would not want to be quoted.

In view of the continuous status of change in the operations, no attempt has been made to carry financial analyses forward on a current basis. Hardly a fortnight has passed during the analysis that there has not been some sort of change made in the service or routing. Underlying practices and policy as to procedure with respect to operations, personnel, organization and management have, however, adhered to a standard pattern and those controlling conditions that have been found to be basically out of adjustment are not of such character that they could be easily corrected within the short period of time during which the survey has been in progress.

In view of this constant state of change, financial analyses have been for the most part related to the month of October 1948. That month was selected as a representative period during school operation prior to the holiday season and should reflect reasonably normal conditions.

It has been necessary in conducting the survey to interrogate numerous operating and administrative personnel. In such discussion it was, of course, not possible to conceal the principal objectives toward which the inquiries were directed. It has been quite noticeable that over the period of four months during which this analysis has been underway there have been a number of improvements effected along the lines indicated by the inquiries of the investigators. To the extent that such improvements have been prompted by activities of the survey group, it is felt that some good has already been accomplished.

It may be contended by opponents to the findings of this report that certain of the conclusions are based upon conditions formerly existing and that corrections have been made during the interim. In the overall review, however, this does not detract from the fact that such improvements could have and should have been made prior to initiation of the survey.

In support of field observations many personal notes have been taken from day to day, recording the various instances and conditions observed. These voluminous notes are supplemented by many details carried in the minds of observers and not recorded. In further support, a great many photographs have been taken throughout the various facilities of the property and a few representative shots are included in the appendix. Many others are on file.

An open-minded approach has been followed throughout and only after complete assembly of all field and office data, and comprehensive coverage of all phases of the problem, has the material been summarized and the conclusions and recommendations drawn up.

ARRANGEMENT OF REPORT

The report has been arranged in such fashion as to present the data considered pertinent for inclusion, in the order of sequence that is most easily followed. In view of the many conditions found to be in need of correction, ranging throughout the entire operation and organization, it would be difficult to present a showing as to factual conditions covering the entire analysis, followed by a separate assemblage of discussion, conclusions and recommendations. To prepare the report in that manner would result in considerable duplication and repetition of description.

For this reason the report has been compiled in several parts, each embracing a major subdivision of the analysis. Although a summary of the most important conclusions and recommendations has been included in the last Part, it will be necessary to read the entire report in order to obtain all conclusions, as they have been interjected at the appropriate points where the related subject matter is presented.

FUNDAMENTAL ISSUES

The magnitude and importance of the mass passenger transportation problem in San Francisco has been the subject of discussion and negotiation over a period of years dating back to the early development of the city itself. The present era of transportation evolution commenced with reconstruction of the city after the fire and earthquake of 1906 and since that time the matter has been the subject of political, civic and technical controversy, to a greater extent possibly than any other issue confronting the municipality.

Many reports, studies, elections, bond issues, and construction programs have passed with the years and in reviewing the objectives, failures and accomplishments, one fact stands out in bold relief. That is the absence of carefully calculated, systematically planned and clearly defined recommendations as to organization, management and practical application of efficient and economic operational specifications. It is one thing to design the engineering and constructional aspects of a utility as to its dimensions, esthetics, capacity and quality of materials, but distinctly another and of equal if not greater importance, to specify the method and organization by which its costly facilities are to be placed in operation and judiciously administered to the ultimate benefit of the general public to whom the entire resources are presumably to be dedicated.

Efforts have been principally converged upon the design of facilities—the construction of a physical transportation machine with all of the necessary parts to enable it to function. In contradistinction to the huge appropriations for surveys, reports, and construction, comparatively little specialized talent of a qualified nature has been devoted to formulating a master plan of coordinated organization and operational procedure that would take full advantage of most recently developed practices and establish a definite set of proper specifications for personnel work program and control. This highly important feature has been treated in a piecemeal fashion with many changes, and through participation of numerous agencies and individuals in a manner that has not been productive of the highest standard in this specialized field of endeavor. It has been that failure to give proper recognition to the human element in the detailed planning of the machine that has made this survey necessary and that has been responsible in large measure for present deficiencies.

Initiation of this project is a commendable action and one that is highly essential, particularly at this time when expenditures of so many millions of dollars are contemplated for wide-spread construction and expansion of the transportation

system. Such an analysis would have been beneficial prior to consolidation of operations of Municipal Railway and the Market Street Railway Company several years ago. Due, however, to disruptive effects of war and general confusion of the war time traffic burden throughout the country at that time, there is understandable reason for not having done so.

However, when it is considered that the Municipal Railway as it exists today, represents an original cost for facilities of about $45,000,000 and collects a gross annual revenue of approximately $19,000,000, virtually all of which is expended to cover costs of operation, it must be recognized as a business of large and important scale comparing favorably in scope with many of the larger industrial enterprises of the area. To allow such a revenue producing public investment to function at a financial loss without devoting to it the fullest extent of mature thought and study commensurate with its magnitude, is to minimize the importance of controlling the finances of the people of the City of San Francisco.

Tremendous bond issues have been floated to finance construction of the facilities, carrying with them major obligations that are a lien against the physical assets of the City and consequently a direct burden upon the public. It should be recognized as properly the responsibility of those public officials charged with guarding the welfare of the city's population, to pursue all possible means of insisting upon the most capable and thoroughly qualified organization and personnel to be directly charged with the responsibilities of operation the property at the highest standard of service, maximum economic efficiency, and fullest utilization of facilities.

In preliminary discussions with the Finance Committee of the Board of Supervisors it was indicated that the Board is principally concerned with the financial aspects of the operations and the standards of service. These two items are, of course, the fundamental issues. In the first place, it is the inherent responsibility of the Municipal Railway to provide the public with a satisfactory form of transportation that will reasonably meet the specifications of convenience and necessity. In the second place, it is desirable, if within the realm of possibility, to perform this service to the public in such fashion that the revenues collected will at least meet the costs of providing service.

In conducting this analysis one of the basic assumptions has been that all possible steps should be taken to place the operation upon a self-sustaining basis financially. The second assumption has been that a reasonable standard of service should be established at a fare that is equitable. These assumptions automatically bring into focus for consideration all of the financial, operational and organizational aspects of the system.

As stated above, the fact that the survey has been ordered is an indication of dissatisfaction with operations, and the procedure followed in conducting the survey has been designed to disclose as completely as practicable all practices and conditions that prevent the closest approach to ideal conditions.

OBSTACLES TO ANALYSIS

In carrying out the dictates of the authority, it has been more difficult than would ordinarily have been the case due to the many changes being made currently in the physical characteristics of the operations and facilities. A number of street car lines have been in process of conversion to electric trolley coach and motor coach operation, with attendant temporary reroutings and service alterations during the time this study has been in progress. Changes have been made in physical

facilities, one of which has been removal of street car operation from the Potrero Division and conversion of that division to trolley coach operation exclusively. There has also been under construction new motor coach maintenance and servicing facilities at the Ocean Division.

Whereas under normal conditions with a static operation, certain standard and basic statistical data are compiled and readily available from day to day on a current basis, such information was not found to be available on this property. Numerous records that are considered basic to proper control and operation on other properties are not kept by Municipal Railway.

These conditions have created a problem not originally anticipated upon initiation of the survey and, although the analysis has been more difficult as a result, the necessary material has been especially developed by the survey group and compiled in detail for consideration in deriving the conclusions set forth herein. It should be kept in mind that a considerable portion of the data as to service and statistics by lines applies only to the dates and periods shown on the statements. Similarly the maps of routes are applicable to the dates shown and do not represent conditions in every respect as of later dates.

It has also been difficult to arrive at dependable estimates of financial expectations for the future due to the fluidity of planning the future of physical facilities.

THE PROBLEM AND ITS SOLUTION

The problem in this instance is to design a program of organization, operation, service and facilities that will reasonably comply with the expectations of the people of San Francisco who make use of the system and must pay for it. The nature of the problem should be evident to anyone having occasion to ride mass transportation facilities in this city or to observe the transit operations from day to day. It is further evident from an examination of the financial statements of the railway which show for the fiscal year ending June 30, 1947, a deficit to net income of $531,150.12 and for the fiscal year ending June 30, 1948, a deficit to net income of $1,507,837.16. It should be kept in mind that there is not included in this deficit any of the ordinary tax charges to which privately owned operations are subjected.

There are two essential parts to the problem. One is service and the other is finance. Solution involves the identification of those conditions and circumstances that are responsible for the deficiencies of service and inadequacy of financial results, and the launching of remedial measures designed to correct them. The two principal features of service and finance are directly related and the contributing causes can be expected to stem from the same source to a large extent.

In analyzing the financial problem either the revenues earned are too small or the costs of operation are too high, or there exists a combination of the two conditions. To determine the true state of affairs, careful inspection must be made of the sources from which revenue is derived to ascertain whether or not the fullest potentialities are realized. Of equal importance is the necessity for close investigation of all those functions represented by the costs of operation to establish whether or not prudent management is exercised, appropriate control exists with respect to the sources of expenditure, and most effective practices and procedures are followed in performing the operation with maximum utilization of facilities and manpower. This can only be determined by an exhaustive search of all functions contributing to the cost of labor and materials. This has been done.

As to standards of service, the source of deficiency can only be identified by comprehensive review of operating procedure, supervisory control, managerial policy, organizational design, and the efficiency and qualifications of personnel, as well as extraneous field conditions beyond control of railway management. These fields have been carefully scrutinized by analysis of financial and payroll records, personal interview with personnel, field observations, and detailed study of the various controlling rules, regulations and policies.

PRESENT REHABILITATION PROGRAM

In line with the recommendations of several reports recently prepared, the Municipal Railway system is presently undergoing a major transformation which contemplates ultimately elimination of all street car lines with exception of those operating through Twin Peaks Tunnel and on Geary Street. The long-range program, as described verbally but for which nothing in written form has been seen, if carried out, will provide for replacement of all rail lines by trolley coaches or motor coaches with exception of the Twin Peaks Tunnel lines.

At the time of consolidation of Municipal Railway and Market Street Railway Company all major trunk lines were street car operation. Motor coaches were largely confined to feeder service and crosstown operation. There was only a limited amount of trolley coach operation.

In the original of the current rehabilitation planning and development, aside from the possible future subway construction, retention of street car operation on a fairly large scale was contemplated. In presentation to the public the proposition requested a bond issue of $20,000,000 for rehabilitation purposes and provision was made for the purchase of a large number of new stream-lined street cars for replacement of older equipment on certain of the major rail lines. Subsequent plans have been changed as a result of several technical reports prepared and submitted since the bond issue was passed. The ultimate plan now provides for elimination of a large proportion of street railway operation and substitution of electric trolley coaches of smaller capacity and also extensive motor coach operations.

In general no major changes in routing of trunk lines throughout the system are contemplated. The pattern of trunk routes has been well established, particularly on the rail lines, and with residential and business areas having developed adjacent to such routes, it would be inadvisable to radically alter their arrangement except for elimination of duplication in a few locations. In the downtown section the destination of inbound traffic is also well established. The basic pattern of travel is relatively permanent with exception of the newly developed outlying areas to the west and south.

Although there appears to be no need for radical change in routing, there is a definite need for changing individual lines for the purpose of eliminating unnecessary and costly duplication in certain directions and to alter the system so as to provide reasonable coverage on as nearly as possible a standard basis of reasonable walking distance taking into consideration the topographic conditions in each instance. In certain of the recent reports recommendations have been made that certain features of duplication of service be eliminated. These suggestions have in each instance been met with loud protest by those persons and civic groups interested in the localities involved.

At the present time, changes are underway on Market Street—the principal mass transit traffic concentration thoroughfare in the city. The traditional four-track railway line on Market Street has been modified by elimination of service on the two

outer tracks and routing of all rail lines over the inner tracks. Much reconstruction work has been done in replacement of rails and supporting structure of the inner tracks and to a considerable extent the outer tracks have been removed. Recently all rail lines formerly operated to the Ferry Building at the foot of Market Street have been rerouted to the Bridge Terminal so as to permit installation of overhead electrical facilities for trolley coaches which are later to be operated on Market Street.

It is contemplated that in the ultimate plan the only remaining rail lines will be those operating through the Twin Peaks and Sunset Tunnels and those operating on Geary Street. The survey group has been informed by responsible authority verbally that probably the Geary Street lines will ultimately be replaced by rubber-tired vehicles.

Considerable work is already in progress on alteration of existing structures and facilities and construction of new. At the Geary Street car barn, which houses the general offices and is now entirely devoted to street car operation, it is intended to expand the total area to provide for a trolley coach service and storage facility. The upper deck of the structure, with entrance on Geary Boulevard, will continue to serve street cars, but the lower deck, with entrance on Presidio Avenue, will be devoted to trolley coach operation. This program calls for the acquisition of a large vacant land area west of Presidio Avenue and north of the present Geary Street barn. This area is to be excavated to a grade level with Presidio Avenue and paved for trolley coach service. Major alterations to the present building are also planned to provide for shop and service facilities for trolley coaches.

At the Potrero Division the reinforced concrete building which heretofore has been devoted exclusively to street car operation, has now been completely converted to electric trolley coach. The structure itself is now in process of demolition in part to make way for reconstruction to accommodate trolley coach storage, service, maintenance and repair. This division will be the main repair depot for trolley coaches.

At the Ocean Division extensive new construction has already been completed to provide facilities for maintenance, service and storage of motor coaches to be headquartered at that division. The principal work in this connection for motor coach operation has now been completed, consisting of a large reinforced concrete service building, an automatic motor coach washer, fueling facilities and paved storage area.

Although work has not yet been commenced, the plans call for construction of a new major rail repair shop to replace the present antiquated facilities taken over from Market Street Railway, located at the intersection of Ocean Avenue and San Jose Avenue, immediately adjacent to the new Ocean Avenue bus division. That new facility will be the main heavy repair depot for all remaining rail equipment.

It is also planned to increase the capacity of motor coach facilities at the 24th and Utah Division which is now heavily overloaded and improperly designed to satisfactorily meet the requirements of a heavy motor coach repair and overhaul depot. That point is now the main repair and overhaul facility and it is intended to maintain it in that status under the expanded motor coach operation. It is the intention to acquire additional land area in the vicinity of the present facility, raze the existing wooden dwellings and construct a suitable storage yard. At the present time there is insufficient area available to take care of the relatively small number of coaches now operated from that division. It will be impossible to accommodate any further expansion without acquisition of additional area.

The motor coach service and storage facilities at the McAllister Street Division are planned for elimination in the overall program. Formerly that location was a rail division of Market Street Railway Company. Subsequent to consolidation rail service on the lines served by the division has been either discontinued or taken care of elsewhere and the structures formerly occupying the area, due to their age and hazardous condition, have been torn down with exception of a small structure used for housing the offices and employees' facilities. The plan calls for complete discontinuance of this division.

The Sutro Division, which presently serves the rail operations of the Sutter Street lines, is scheduled for complete elimination at such time as rubber-tired vehicles are substituted for rail cars. The property is to be disposed of.

In the long-range planning, consideration is being given to the development of a street car storage and operating division beyond the Twin Peaks Tunnel at a location in the vicinity of Lake Merced near the outer end of the "K" and "M" lines.

As indicated above, the mass transit rehabilitation program resting on the books as of the present time is the result of a number of features of several different technical reports, including the Newton Report, the DeLeuw Cather Report and the Report of the Technical Committee of the Administrative Transportation Planning Council appointed by the Mayor, with subsequent modification.

A more detailed description of the present rehabilitation program will be found in a later chapter together with comments as to certain features of the plan considered to be undesirable.

HISTORY AND PRIOR REPORTS

INCEPTION OF MUNICIPAL RAILWAY

The first attempt of record to establish a municipally operated transportation system dates back to December 2, 1902, when a proposition authorizing $700,000 in bonds for the purpose was defeated at the election. Another attempt met with defeat in October 1903, immediately prior to expiration of private franchises on Geary Street of the Park and Ocean Railroad Company.

On June 24, 1909, a proposition authorizing $1,950,000 in bonds for a municipal system was defeated and on December 30, 1909, a proposition authorizing $2,020,000 in bonds was carried. The first issue of $120,000 was sold on July 18, 1910, followed by commencement of construction on Geary Street in the summer of 1911. The cable system that formerly operated on Geary Street ceased functioning on May 5, 1912, and on December 28 of that year the first line of the Municipal Railway was placed in operation on Geary Street between Kearny Street and 33rd Avenue.

EXPANSION

From that time forward there were a number of extensions made up to 1918, when the "K" line was placed in operation on February 13 upon completion of the Twin Peaks Tunnel, a bore 11,920 feet in length.

On January 8, 1932, jurisdiction over Municipal Railway was transferred from the Board of Public Works of the city, to the Public Utilities Commission under provisions of the new charter. On January 15, 1939, Bay Bridge trains commenced operation between Oakland and San Francisco and Municipal Railway cars were routed to operate to the terminal. On December 27, 1939, the first five new, modern, streamlined rail cars were placed in service. On September 7, 1941, the first Municipal Railway trolley coach operation was commenced on Howard Street.

ACQUISITION OF MARKET STREET RAILWAY

On May 16, 1944, the voters approved purchase of the Market Street Railway lines by payment of $2,000,000 in cash and $5,500,000 to be paid from earnings of the acquired properties. On eight other occasions the voters had rejected the proposal to take over Market Street Railway operations, the first being in 1925 and the last prior to passage, having been in 1943. At five o'clock in the morning on September 29, 1944, the operative properties of Market Street Railway were merged with those of Municipal Railway and operation commenced as a consolidated system.

On January 7, 1945, all motor coach operations of the system, including maintenance, repairs, storage and dispatching, were centralized at the 24th and Utah Streets Garage.

For purpose of comparing the magnitudes of the two properties prior to consolidation and prior to the abnormal bulge of war-time traffic, the table on the following page has been included to show conditions for the year of 1941.

HISTORY OF FARES

On September 29, 1944, upon consolidation of the properties, the traditional 5¢ fare of Municipal Railway was increased to 7¢ cash or tokens with universal transfer. On May 20, 1946, the fare was increased from 7¢ cash or token to 10¢ cash or 8-1/3¢ token. The token rate was eliminated on January 26, 1949, and a straight 10¢ fare established.

STATISTICAL DATA

MASS TRANSPORTATION FACILITIES - CITY OF SAN FRANCISCO

1941

Carrier	Round Trip Route Miles	(1) Rolling Stock	Vehicle Miles Operated	(2) Total Passengers	Total Passengers Per Mile	Revenue Passengers	Revenue Passengers Per Mile	Base Fare Structure
MARKET STREET RAILWAY								
Street Car	280.06	442	10,920,524	86,739,761	7.9428	64,576,639	5.9133	7 Cents
Cable Car	12.23	39	672,679	8,181,361	12.1624	5,423,008	8.0618	7 "
Bus	158.46	115	4,842,454	29,057,523	6.0006	18,378,119	3.7952	7 "
Trolley Coach	10.17	9	418,889	2,262,642	5.4015	1,476,851	3.5256	7 "
Total	460.92	605	16,854,546	126,241,287	7.4900	89,854,617	5.3312	
MUNICIPAL RAILWAY								
Street Car	113.25	238	8,111,999	96,077,936	11.8439	75,040,956	9.2506	5 Cents
Cable Car	-	-	-	-	-	-	-	-
Bus	60.03	41	2,027,909	11,521,972	5.6817	7,225,503	3.5630	5 Cents
Trolley Coach	6.81	9	100,782	850,718	8.4415	671,039	6.6583	5 "
Total	180.09	288	10,240,690	108,450,656	10.5902	82,937,498	8.0988	
MARKET ST. & MUNICIPAL COMBINED								
Street Car	393.31	680	19,032,523	182,817,697	9.6055	139,617,595	7.3357	
Cable Car	12.23	39	672,679	8,181,361	12.1624	5,423,008	8.0618	
Bus	218.49	156	6,870,363	40,579,495	5.9065	25,603,622	3.7267	
Trolley Coach	16.98	18	519,671	3,113,390	5.9911	2,147,890	4.1332	
Total	641.01	893	27,095,236	234,691,943	8.6617	172,792,115	6.3772	
CALIFORNIA CABLE	10.58	48	928,398	11,019,536	12.1984	9,033,596	9.7303	5 Cents(4)
JITNEY (3)	36.00	136	8,250,000	6,000,000	0.7273	6,000,000	0.7273	10 "

NOTE: Miles outside San Francisco (#40 San Mateo Line) = 26.65 round trip miles in San Mateo County.

(1) This includes all rolling stock, except work cars. As of 12-31-41, 395 out of a total of 481 Street Cars were assigned.

(2) Transfer passengers included; Pass passengers not included.

(3) All figures are estimates. Only 25.0 round trip miles of Jitney route now operated.

(4) Application for 7-cent fare pending before California Railroad Commission.

On November 4, 1947, general obligation bonds in amount of $20,000,000 were voted for rehabilitation of Municipal Railway. On that same date at the general election a charter amendment was passed requiring retention of the municipally owned cable car system.

PRIOR REPORTS AND SURVEYS

A multitude of investigations, surveys, reports and studies have been made in the past by numerous agencies including municipal departments, state agencies, civic groups, and private consultants, in an effort to improve the passenger transportation deficiencies of San Francisco and to devise ways and means of meeting the needs of the area. Many elaborate documents have been prepared by a number of distinguished and capable engineers and planning experts, replete with artistic interpretations of architectural beauty and esthetics. Exhaustive and formidable traffic checks and surveys have been made with numerous overwhelming compilations of statistics and data. There have been almost as many differences of opinion as to the proper solution to the transportation problem as there have been reports prepared.

Despite all of these costly projects and voluminous recommendations, the transportation system of this city still falls far below the standard of adequacy to which the traveling public is justly entitled. Possibly this condition can be attributed in some measure at least to the strict adherence to technical and academic formulae of design dealing largely with the mechanical and material things rather that with individual human desires and requirements. The emphasis in most instances has been upon the design of facilities that mechanically will meet all standards of engineering and architectural rules as to physical arrangement of the various parts making up the whole, but the same degree of precision and care in designing and constructing the personnel organization to efficiently operate and maintain the facilities has notably been lacking.

A partial list of the many reports prepared since inception of the Municipal Railway is as follwos:

LIST OF SURVEYS AND REPORTS
RELATED TO PASSENGER TRANSPORTATION PROBLEMS
OF SAN FRANCISCO

Date	Author	Title
1905	D. H. Burnham	Report of D. H. Burnham on the Improvement and Adornment of San Francisco
1913	Bion J. Arnold	Report on the Improvement and Development of Transportation Facilities of San Francisco
1927	Delos F. Wilcox	San Francisco's Street Railway Problem
1929	M. M. O'Shaugnessy	Street Railway Transportation Requirements of San Francisco
1931	M. M. O'Shaugnessy	Rapid Transit Plans for the City of San Francisco
1931	Calif. R.R. Comm. A. G. Mott	Report on Municipal Railway of San Francisco
1936	Ridgeway & Brahdy	Rapid Transit for San Francisco
1937	Miller McClintock	A Report on the San Francisco City Wide Traffic Survey
1943	Joseph B. Eastman Office of Defense Transportation	Report and Recommendations on San Francisco Transit

Date	Author	Title
1945	T. H. Nicholl Division Director Office of Defense Transportation	Report on San Francisco Municipal Railway
1945	Leonard V. Newton	Postwar Transit Plan for Municipal Railway
1946	Woodruff and Sampson	Transportation and Utilities Section of City Planning Commission Master Plan
1947	Technical Committee, Mayor's Administrative Transportation Planning Council	Traffic, Transit and Thoroughfare Improvements for San Francisco
1948	J. H. Turner to Public Util. Comm.	1947 Municipal Railway Bonds
1948	Technical Committee Depts. Public Works, Public Utilities, City Planning and Police	Transit Modernization and Related Traffic Control Measures
1948	DeLeuw, Cather & Co.	Transportation Plan for San Francisco
1948	R. S. Chew	Proposed San Francisco Rapid Transit
1948	Sidney H. Bingham	Long-Range Rapid Transit Program for San Francisco

Numerous other reports of lesser magnitude dealing with finances, properties and service have been prepared by various individuals and agencies, including several compiled by engineers of the State Railroad Commission as applying to the Market Street Railway operations and the California Street Cable Railroad. There have also been several general reports prepared by the San Francisco Chamber of Commerce and other civic groups.

In addition to the reports listed above prepared by outside agencies and individuals, there have been several technical reports covering special features of the Municipal Railway operations since its consolidation with Market Street Railway Company, originating from various offices and bureaus under jurisdiction of the Public Utilities Commission of San Francisco.

Steps are now underway to conduct another survey intended to review, reconcile and consolidate the desirable features of the several recent reports and surveys. This is to be done under direction of the Utilities Engineering Bureau. If the Municipal Railway organization were properly constituted as to authority and qualifications it should take the leading role in such a technical review with respect to all matters relating to mass passenger transit.

SIMPLIFICATION OF NEW PROPERTY

From its inception in 1911 the Municipal Railway of San Francisco grew from a small beginning to a fairly extensive operation at the time of the consolidation with Market Street Railway Company on September 29, 1944. In the early stages of its development the railway was small. It commenced as a single line on Geary Street, operating from Kearny to 33rd Avenue and Park with ten cars. Ample funds were available at that time and the line was constructed of the best in materials, and rail equipment of the last word was purchased and placed in operation. As the extent of coverage increased from that date forward the railway was blessed, for the most part, with all new facilities with many years of continuous and dependable service relatively free of maintenance and operating problems. Due to the method by which it was developed, wherein only select routes were chosen, new construction and equipment were of the best and the 5¢ fare structure was simple, operation and management were relatively self-propelling.

DEVELOPMENT OF COMPLICATIONS

Prior to the war, however, the cycle of newness was disappearing and the Municipal Railway of San Francisco was faced with real problems of maintaining equipment and fixed facilities and also the adverse effects of financial retardation. During the early part of the war the system was taxed far beyond its anticipated capacity and its problems became increasingly severe requiring the exercise of unusual managerial ability to maintain a reasonable semblance of service, personnel morale and equipment maintenance.

During that same period when Municipal Railway was building its new system, the other major carrier in the field, Market Street Railway Company, was already experiencing the problems resulting from age of facilities, deferred maintenance, obsolescence, and the necessity of covering areas of lesser population where earnings were lean. That system was greater in its extent of coverage than the Municipal Railway. Each of its rail lines was covered by a franchise granted by the City and as the last war approached, the company found itself in many instances operating rail cars over track upon portions of which its franchises had expired and the city could exercise its legal rights in bringing operations to a halt if it so desired.

Regardless of the causes or responsibility for its condition at the time of consolidation, operations and facilities, particularly the latter, of Market Street Railway Company were at a deplorably low ebb. Effects of the war had been felt in the organization and management of the company. Its problems at that time, both from the point of view of maintaining its facilities and operating its properties, were tremendous.

Upon consolidation the small property, which had by that date begun to feel the real impact of its age, absorbed the greater property and together with it, took its problems. There were organizational deficiencies in both properties at that time and the consolidation of operations meant a consolidation of organizational difficulties.

Difficulties of major magnitude were experienced almost immediately upon consolidation. Due to the effect of inadequate service upon military activities, the Office of Defense Transportation intervened and ordered an investigation by a Washington representative in coordination with the local office and the military establishments. As a result of that report the difficulties were determined to be not entirely the result of conditions beyond control of management. Military participation in the actual maintenance of equipment for the city was necessary to ensure the continued flow of essential war workers and military personnel over the lines of the system.

Basically there have been no major changes in the functional organization of the transportation system subsequent to the war and to a large extent the problems confronting the operation today stem from the same source existing at that time.

RAPID TRANSIT PLANS

One of the principal considerations of the many reports and surveys throughout the past three decades has been the issue of rail rapid transit by subway. There have been a variety of such plans submitted by numerous individuals and agencies. In each instance tremendous expenditures of funds would be involved for construction of the underground facilities. In no one of those subway plans has there been any consideration given or recommendations or analysis made with respect to the paramount

feature of proper organization and methods of work program designed to meet, with the highest degree of efficiency, the problem of operating the system. For some reason, which in most cases is not too mysterious, these reports have shied away from the matter of actual operating practice and procedure and the proper selection and establishment of appropriate qualifications of managerial, supervisorial and operational personnel.

During the past two years there has been a procession of reports and studies instituted by various departments, offices and individuals, with results following the same pattern of variety and controversy exemplified by the many prior reports. There no doubt will be numerous reports following this on the same subject.

SAN FRANCISCO PROBLEM UNIQUE

The answer to the problem, however, will not be forthcoming until such time as the problem is attacked from the point of view of its local characteristics and a thorough understanding of its real magnitude with respect to the City of San Francisco and not with reference to the subways of New York, the rapid transit system of Chicago, or the underground transit operations in Philadelphia. San Francisco stands out as a unique problem not directly comparable with the problem that will be found in any other city in the country other than as to general procedure and methods of operations that have been established as common standards. It is the City of San Francisco that is in the best position to evaluate the nature of its transit requirements and to determine the proper method of solution through the medium of qualified persons who are alive to the local situation.

Mass transit capacity of this city with the surface system, can be increased by at least 25 per cent by proper control, design and operation with the necessary degree of cooperation and coordination with the various other departments concerned with street traffic and control. By other means of much lesser cost than subways, the capacity of mass transit in this city can be increased far beyond that figure.

The issue, when stripped down to its bare essentials, becomes one of establishing whether or not the element of economics is to be controlling or whether the public is to be provided with a high-speed superdeluxe operation regardless of the cost and the burden upon the tax roll.

CHAPTER III

BASIC ELEMENTS OF MASS TRANSIT

IMPORTANCE TO METROPOLITAN AREAS

Mass passenger transportation service is highly essential to all large cities and metropolitan areas. This was recognized in the early days when street cars drawn along rails by horses were introduced in San Francisco. Distances then were relatively short and many persons walked between their places of employment and residences. In the modern city this is, of course, no longer possible and some means of mechanical transportation is required to move the masses of persons to and from the central business areas, as well as between outlying points, on a daily basis.

The automobile has, since its inception, provided a personal means of transportation that has been widely accepted and under present conditions is relied upon by a large percentage of the city's population which would otherwise be carried by mass transit facilities. Although the percentage of travel by automobile in large cities of the west, as compared to mass transit, is much higher than in comparable cities in the east, under the present condition of population it is an indispensable medium without which public transportation would fall far short of sufficient capacity to provide an adequate service. Despite the appreciable percentage of persons who are financially able and desire to use their private automobiles, there are many persons who, due to necessity, must rely upon mass transportation. To them the service is as essential as the supplying of other utilities and the provision of police protection and fire prevention. It is an institution that cannot be dispensed with and will be as permanent as the cities themselves, although its characteristics may change radically with passage of time.

Unfortunately there is a wide-spread misconception as to the importance and complicated nature of mass transportation facilities and service. This industry is not usually accorded the recognition to which it is entitled--it is too often relegated into the category of elementary business considered to require no unusual degree of skill or managerial ability in its performance of service. The public does not recognize the high degree of precision needed in directing the activities of the thousands of employees required to perform the transportation service or to design and maintain the precision headways necessary to the smooth flow of traffic and reasonable speed of travel. They fail to take into consideration that the financial status of a transportation operation compares equally with many of the greater industries of a commercial and manufacturing character which make up the economic foundation of any large city.

Before the real problems confronting the public of San Francisco can be fully solved, there must be a program of education that will present to the people a more complete understanding of the nature of the device upon which they depend for their daily travel.

DEFINITION OF MASS TRANSIT

Mass transportation might be compared with a machine designed for the purpose of producing a consumable commodity. The machine consists of the track and roadway, the equipment, the supporting facilities, and the scheduled operations. If the machine is properly designed in all of its parts so that it is capable of satisfactorily producing the quantity of service required to meet transportation requirements in accordance with the pattern of public desire for travel, it then needs only the application of properly qualified operating personnel to keep it in operation. No matter how good the machine may be or how well qualified its designer may have been, it will not function satisfactorily any more so than would any other machine, either an electric generator or a steam turbine, unless it is properly controlled by

experienced and qualified hands that know its capacity, its operating characteristics, its limitations, and the normal indications of trouble. The most expensive and latest design of passenger carrying equipment, whether it be subway cars, streamlined street cars, trolley coaches, or motor coaches, will not function satisfactorily or provide the proper standard of service unless the operating organization knows its job and is qualified to meet all conditions of normal operation and unexpected disruptions.

Similarly, the best of facilities will be rendered inefficient and non-productive if they are not operated in accordance with properly designed schedules based upon actual traffic patterns which fluctuate from day to day and from season to season. An operation that might have the best of earning potentialities can be financially wrecked if not operated upon properly designed schedules. Similarly, even if the facilities are good and the schedules are right, the service will break down if it is not properly supervised.

There are three important elements to the proper functioning and production of the transit machine. First is the design and quality of the physical facilities; second, is the proper design of the pattern of schedules upon which the equipment is to operate; and third, is the need for proper field control of the many employees responsible for conduct of the individual units of equipment. Unless the operators are guided and properly instructed toward the end of adhering to properly designed schedules, the service will break down. These three factors are inseparable and must be precisely coordinated if the fullest measure of efficiency and effective utilization of facilities and manpower is to be attained.

In addition to these three basic considerations there is another of paramount importance without which the system will deterioriate and fail to meet public requirements. That element is proper managerial control. It is paramount to the other three and upon it are dependent all other phases of the operation.

DIFFERENT FROM OTHER UTILITIES

Although mass passenger transportation is ordinarily considered as a public utility, there are inherent differences between its characteristics and those of other types. A public utility is ordinarily considered to be a business enterprise engaged in the production of commodities or service that are generally required by the public as a whole, and classified as essential to the well being and existence of the population to which it is provided. Within this group fall the gas, electric, water, telephone, and telegraph companies.

The principal differences between mass passenger transportation and those others named is the difference in understanding of the general public of the technical and operational problems involved and the nature of their economic problems. Under private ownership each class of utility is conducted as a business enterprise and for it to survive it must receive in return for the commodity or service it produces a sufficient amount of revenue to offset the cost of production, and return to the owner a fair profit. There is no reason, under public ownership, to depart from this basic theory. Actually proponents of public ownership contend that in the operation of municipal utilities it should be possible to provide service to the public at lower rates than under private ownership by reason of the economies that can be enjoyed through exemption from taxation and elimination of the profit motive. Upon this assumption, theoretically the allegation is sound.

As indicated above, we know that a privately owned utility carries with it the profit incentive which makes it mandatory that revenues be greater than cost of service if the business is to survive. Inefficiencies of management and operation

and failure to take advantage of latest developments in the fields of science, engineering, and business administration are immediately reflected in reduction of net income and if the economic balance is permitted to reach a stage of loss, usually there is an immediate change in management and personnel to effect remedial measures or, if such sources of relief are determined to be absent, recourse is taken to the bankruptcy laws.

The situation is somewhat different with respect to publicly owned facilities. Once a municipal or other governmental agency has taken over the responsibility of conducting utility operation which is considered to be essential to public welfare, and indispensable, that utility continues in operation even if revenues are not sufficient to offset costs of operation. Some means is usually established for making up the deficit out of general taxation thereby throwing the burden upon the public indirectly, rather than completely upon those individuals making use of the service.

ELEMENT OF COMPETITION

One inherent difference between a mass transit utility and gas, electric, telephone, or water utility is the element of competition. In those other fields there is virtually no competition whatsoever. There is only one source from which a household can obtain its electric power for lighting or household appliances. Similarly, there is only one source from which water is obtainable. It is true that persons can use kerosene lamps or candles or can burn wood or coal, but these possibilities offer too much inconvenience and, in the long run, such a higher cost that they can be considered as offering no competition whatever. The case is parallel with respect to the telephone and telegraph services.

The situation is much different, however, with respect to mass passenger transportation. Over the period of years since the private automobile was developed a real competitive field has been opened which has made great inroads upon the volume of traffic and the revenue earned by mass transit facilities. Before the advent of the automobile the travelling public had only one choice and that was to use mass transportation, if the journey was to be greater than normal walking distance. The extent of automobile competition varies considerably depending upon the location under consideration and the local characteristics of the municipality.

Together with the actual diversion of traffic from mass transit lines to the private automobile has come other related problems directly attributable to the privately owned automobile. The problem of vehicular congestion in large cities is preponderant due to the great number of automobiles occupying the streets. To effect control over such congestion, traffic signals have been installed at all major intersections. In the modern city the main concern with respect to congestion and traffic is to devise means by which the private automobile is to receive the most expedited freedom of activity. The concentration of effort is almost entirely directed toward the convenience of the automobile traveler and mass transit is subordinated thereto.

As a result of the congestion and the large-scale use of private vehicles, to say nothing of the thousands of commercial trucks, that make free use of city streets for parking purposes, the street widths have been reduced, narrowing down the channel through which all vehicles must pass. All of these things add to the problem of mass transportation operations.

There are always a certain appreciable percentage of the total travelling public in any large city that is dependent upon mass transportation and either through necessity or desire, do not make use of the private automobile. It is this portion of the public with which we are concerned primarily in considering the problems of transit utilities.

HIGH LABOR COST RATIO

There is another real difference and probably the one which exerts the greatest amount of adverse effect upon mass transit and that is the relationship between labor costs and the total cost. In mass transportation operations cost of labor represent ordinarily between 65 and 75 per cent of the total cost. This is a tremendously greater percentage than is experienced in other utilities.

When considering, for example, a water utility, the commodity is supplied by nature; its transportation is effected by mechanical devices consisting of impounding facilities, pipe lines, pumps, storage reservois, and treating mechanism. Even the measuring devices are machines which ordinarily record the amount of water. The process is almost entirely mechanical and electrical. Actually, when once set in operation, all personnel could retire from service for short duration and the machine would continue to function. On the other hand, if all hands on a transit facility retired, the entire process comes to a dead halt. Service production ceases immediately manpower ceases to function. Failure of one individual on a rail line will stop production of service completely on the entire line.

LACK OF PUBLIC UNDERSTANDING

There is another difference between mass transit utilities and other utilities and that is the extent of understanding of the general public of the means by which the service is created. To the average individual who is completely dependent upon electric power for his lighting, the interior of a power generating plant or any one of the many intricate and complex electrical devices related to it are mysterious and beyond his comprehension. He does not realize or understand the scientific principles involved, the methods by which the machines and electrical contrivances were designed or how they function, and his only concern is that when he turns on a switch, light is immediately forthcoming. Similarly with the telephone, gas and water, the consumer is mystified by the methods and the medium through which the commodity is produced and delivered to him. Perfection is relatively almost complete in those utilities.

On the other hand, the average consumer of transportation service considers himself to be a qualified advisor in the field of passenger transportation and he freely gives advice as to how his service should be provided to him and the price he should pay for it.

There is more to the production of transportation service than meets the eye of the daily traveler. The transportation system of any large city poses one of the most difficult problems of any other industry of like size as to commodity sold and revenue earned. There are hundreds of vehicles traveling the streets of all sections of the city at all hours of the day with thousands of employees, each engaged in his particular function, including not only those charged with the responsibility of operating their vehicles, but also the great many others behind the scene who are engaged in the necessary work of supervising service, maintaining the track and roadway, electrical distribution system, equipment, and other facilities. There is also a tremendous problem of management and supervision where so many employees are involved, scattered over such a wide field of operation, far out of sight of headquarters.

TRANSIT DEPENDENT UPON MANPOWER

To properly design an operating schedule and supervise it into practical application presents a problem of real magnitude. Once a mechanical machine is designed and put into operation it will continue to function exactly as expected. Until a

mechanical or electrical failure results, it does not need close and continuous supervision. Once its pattern of operation is laid out, it continues to perform indefinitely and all of its parts function in the proper relationship to one another and it functions in proper sequence with the many other machines and mechanical devices to which it is connected.

To the contrary, however, a mass passenger transportation system cannot function in that fashion. Although the basic fundamentals of the system are inherently dependent upon mechanical and electrical machines and devices that have been carefully designed and constructed, every one of them is incomplete without the human hands that are necessary to guide it.

In many instances the public forms its conclusions as to the deficiencies of passenger transportation service without full knowledge of the limitations imposed upon the operations and the many elements continuously interfering with its smooth flow by reason of conditions that are entirely beyond control of the management or the operating personnel.

QUALIFIED MANAGEMENT IMPERATIVE

It is, of course, a foregone conclusion that by reason of the very nature of the business, wherein it is so predominantly dependent upon manpower, that a breakdown in the chain of command or the managerial or supervisorial functions will be immediately reflected in the service performed.

By reason of the fundamental differences it is imperative that a greater degree of care be exercised in designing the personnel organization of a mass transit system than is ordinarily required in establishing the organization for the other types of utilities that are more largely independent in their functioning due to the use of mechanical devices. Unfortunately this situation is in many cases reversed. A careful analysis of any properly functioning electric power utility will disclose that every employee, almost without exception, from the top managerial position down to the most minor post, is occupied by a person who has passed the rigid test of technical qualifications, experience and satisfactory performance. It is virtually unheard of in those fields for an official in responsible command to be placed in his position from another entirely unrelated field of activity despite the fact that the machine probably would continue to function due to its elements of positive design.

In the passenger transportation field there are two extremes in this regard. One is the older traditional method of the main line railroads where it is considered necessary that the top executive have traveled through all of the subordinate positions. In many instances presidents of such organizations commenced their service with the company in the most remote positions of clerk, telegraph operator, or some other job of like character. This procedure is not always best adapted to the modern trend in business and scientific development. Businesses of today cannot be conducted in the same fashion as business of fifty years ago and realize the fullest benefits financially of the present field.

If a top executive is qualified by a thorough and outstanding record as a business administrator, even though his field may have been somewhat remote, he can often function satisfactorily and very effectively when placed in responsible charge of a business, providing his subordinate organization is well designed, properly trained and capable of performing the duties required of each position. If, on the other hand, an executive is placed in charge of a business for which he is not qualified by experience and his subordinate organization has been haphazardly

chosen and improperly trained, he cannot possibly bring out the most efficient production or economic utilization of facilities and manpower. This is particularly true of mass transportation operations.

THE ECONOMIC FORMULA

As touched upon above, any utility or business under private ownership is conducted in accordance with the profit motive. Ordinarily under public ownership this same concept is usually followed with the advantage in favor of the publicly owned property in comparing the degree of profit under the two types of operation.

Brushing aside the myriad of details ordinarily involved in corporate accounting, the real fundamentals may be reduced to a simple economic formula of three elements. They consist of cost of producing service, revenue collected from sale of service, and the profit, if one exists, or the loss, if the proper balance is not maintained.

In searching for remedial measures for application to a property such as the Municipal Railway of San Francisco, which finds its cost of production greater than its revenue from sales, careful analysis must be made of the dependent variables to determine the changes it may be possible to make that will react favorably in converting the loss into a profit. The primary approach is usually to scrutinize the elements of expenditure to identify all contributory factors responsible for the deficit. If the property is not functioning at the highest standard of economic efficiency or fullest utilization of facilities and manpower, the means are determined by which these can be accomplished or a reasonable approach to the ideal attained.

After having disposed of this part of the formula, inspection must be directed at the sources of revenue to ascertain whether or not there is leakage, too low a price for the service sold, or failure to fully tap the revenue potentialities of the area served. Unfortunately in many instances the source of relief usually relied upon when the formula becomes out of balance is to increase fares in proportion to the amount of improvement required in net. This is by far the most simple method, requiring only a pencil and a few sheets of paper to calculate the expected results. The burden is then passed on to the public. The more appropriate procedure would be to appraise all elements of the operation and its facilities to determine wherein there might be shortcomings if such should exist and to effect the necessary corrective procedure before passing any of the burden to the public.

In a privately or publicly owned utility the general public for whom the service is created is justly entitled to the financial benefits of the highest degree of efficiency and economy in operation and management that is obtainable. Their fares should not be altered in any instance until after all possible sources of economy have been explored by management. The process of simply increasing fares to overcome deficiencies that otherwise exist does not require the degree of executive skill and capabilities ordinarily expected of those in charge of the disposition of such large quantities of public funds as are usually involved.

In connection with the status of the Municipal Railway as it related to the basic economic formula, there will be considerably more said hereafter.

STANDARDS OF SERVICE AND EARNING

In the economic formula there is some considerable degree of latitude in control of costs through adjustment in standards of service. Inasmuch as the magnitude of operation expenses, where the labor ratio is so high, is almost directly proportional to the amount of manpower used and the number of vehicle miles operated, it

can be seen that balance or unbalance in the formula can usually be controlled by adjusting car miles and man hours consumed.

It has been fairly well established in the transit field that standards of service should properly vary as between different types of operation. In what is commonly termed long-haul service of the intercity type, where relatively long periods of time are consumed between points, a seat per passenger is usually provided. In suburban and interurban operation, where the distances are not so great, there usually is established a definite set of rules as to the relationship between the number of passengers and the seats provided. In urban service such as performed by the Municipal Railway of San Francisco, a different pattern is used.

If unlimited funds were available and revenue were not a major consideration, theoretically a seat may be provided for each passenger. In actual practice, however, even if the economics were not of material importance, it would be impossible to provide a seat for each passenger due to the great number of vehicles that would be required and the terrific congestion that would result. It is the commonly accepted practice in all city operations, and particularly in those of large magnitude, that during peak hours an appreciable percentage of passengers shall be required to stand for reasonable lengths of time. This feature of transportation is particularly emphasized in the operations of subway systems in the larger cities of the country. New York is a typical example and any one who has had occasion to use the subways of that city is acquainted with the loading methods and travel characteristics. Where it is necessary to move such large volumes of passengers in such relatively short periods of time, the primary goal is to move the traffic.

There is a difference, however, between calculated high loading standards and those that result from indifference and improperly designed schedules and operating practices. The passenger in city service normally pays a lower fare than passengers traveling greater distances. In some cities the rate per mile is extremely low when the maximum miles that a person can travel for a single fare are divided into that fare.

At this point the principal thought it is intended to convey is that there is a direct relationship between loading standards and service on the one hand, and the revenue earned by the utility and the fare paid by the passenger on the other. In a municipal operation a point of balance should be reached where the operation falls comfortably within the practical limitations of traffic congestion, the revenue earned is in proper balance with cost of service, and the fare charged is not unreasonable.

TRANSFORMATION IN THE INDUSTRY

As indicated heretofore, there has been a great transformation in the transit industry during a relatively short period of time. It was not many years ago when mass passenger transportation in the City of San Francisco was provided by horse-drawn rail cars. That mode of transportation was superceded by the cable car systems Two examples of that venerable industry still remain at the insistence of those members of the population who attribute a greater value to the historic features of the lines than to their practical use and effective occupation of city streets.

Generally the cable lines were replaced by electrically propelled street cars and at one time the passenger transportation system of San Francisco consisted largely of that type of vehicle. When electric street cars were at their peak of acceptance, the motor bus, which was then a newcomer into the transportation field, was considered as a highly inferior type of vehicle designed to meet a specific character of service in providing terminal feeder capacity to the main rail lines.

Much of the present public resentment against motor coaches can be traced back to the unhappy experiences the public encountered in the early days of the vehicle's development. During subsequent years, however, that mode of transportation has rapidly come to the front as a well established and necessary part of the modern city's transportation system.

During that same time the private automobile has become a potential competitor and has forced the issue at a more rapid rate than would otherwise have been the case. Along with the competitive effect of the automobile there has also come the adverse financial status created by the continuous upward trend in cost of manpower and materials. The mass transit industry has been unique in the field of utilities by reason of the continuous battle it has been forced to fight to maintain its proper financial position. It has been mandatory that every possible advantage be taken of new developments and changed conditions as to facilities and operating practices in the fight for self-preservation.

It has been through the force of necessity and not personal desire of the industry that the high cost of maintaining track and roadway in city streets for rail cars has given way to rubber-tired vehicles wherever it has been possible to fit them into the traffic pattern.

ONE-MAN RAIL CARS

One of the first steps taken by the industry throughout the country in its efforts to maintain solvency was to reduce the high cost of operations through development of rail cars designed for operation by one man rather than two as had previously been the accepted practice. Almost every city in the country that still continues to operate street car service uses one-man cars with the notable exception of San Francisco. The failure to take advantage of that real reduction in cost of operations in San Francisco has not been due to the inability of the vehicle to perform satisfactorily, as its dependability and practical application has been proven beyond a doubt in all other cities where it has been put to use. Although such motives may have been impelling in some isolated instances, it has been generally true throughout the industry that use of one-man cars has not been adopted primarily as a means of increasing profits to owners, but as a means of remaining in business at all.

Market Street Railway Company of San Francisco, which formerly operated as an independent carrier, fell in line with the trend of the industry in its efforts to attain the advantages of one-man cars. Its attempt met with failure by reason of the passage of an ordinance in the city prohibiting their use. Similarly in the City of Los Angeles, even after rather extensive one-man operation had already been established on the local system with new cars of modern design constructed specifically for one-man operation, an ordinance prohibiting their use was voted by the people. In that instance, however, the ordinance was declared invalid by the courts and one-man operation was re-established and extended universally to all local lines of the major transit carrier.

HEAVY PEAK HOUR TRAFFIC

Another of the features of transformation that has created a critical problem has been the tendency in cities to confine the bulk of heavy passenger travel within a very short interval of time in the morning and another in the evening. This condition is one of the most difficult with which the transit field is confronted. It is commonly characterized as Peak Traffic condition. It is not at all uncommon in the passenger transportation field for ten times the vehicles to be required to handle traffic during the morning and evening peaks than is necessary to provide

reasonable service throughout the balance of the day. These peaks necessitate, in addition to an unreasonably high investment in facilities that are used a very small period of the day, an extremely high payroll. The idle equipment, although its investment cost continues, can be stored during the off-peak period and does not incur continuous wear. On the other hand, manpower required during those peaks to operate the vehicles must be carried on the payroll for a full day's work even though only a few hours are actually worked. It is, of course, elementary that in two-man operation as compared with one-man service, this abnormal cost is approximately doubled.

PERFECTION UNATTAINABLE

Even in the most efficiently operated transit system it is absolutely impossible to provide a standard of service and a character of operation that will in all respects completely fulfill the desires and demands of the traveling public. There are always those persons who expect the same degree of comfort and convenience in transit service that they enjoy in using their private automobiles. It is obvious that such a standard of service cannot be provided. The private automobile gives direct point-to-point service from the passenger's residential doorstep to his place of business. Mass transportation vehicles cannot perform this type of service. They must be operated to meet the convenience to the maximum possible extent of each of the passengers riding them. This means that a route must be followed that will most closely fit the average needs of the passengers carried and provide the maximum coverage of residential areas that economics can justify.

It is an inherent characteristic of this business, wherein the sole objective is to transport persons, that complaints will be made and dissatisfaction displayed by a certain percentage of the patronage. This will, of course, be reduced to a minimum by efficient managerial control and proper design of operating standards. The public as a whole is not unreasonable in its demands if it is dealt with fairly and convinced that a sincere effort is being made to offer a fair value within the limitations imposed upon the operator.

CHARACTERISTICS OF SAN FRANCISCO AND MUNICIPAL RAILWAY

SAN FRANCISCO AND MASS TRANSIT

Geographic Restrictions - There is no standard formula by which the problems of various transit operations can be classified directly for solution. There is probably no other industry that falls in this category to the same degree. Most other businesses are more or less uniform regardless of their location, but in transportation the conditions found to exist in San Francisco will be found to very widely from those found in New York, Chicago, Los Angeles or any other city.

San Francisco stands alone as to its geographic characteristics. It occupies a peninsula surrounded on three sides by water and is roughly rectangular in shape with an average distance from one boundary to the other of not more than seven miles. In this same general area that condition can be contrasted with the arrangement of the populated area on the eastern side of San Francisco Bay which consists of a long narrow strip extending from the City of Richmond on the north to and including the City of Hayward on the south, about 24 miles overall.

San Francisco is also different as to its topography. It is known throughout the world as The City of Hills. Its residential and business sections are built on the hills and the city's activities are to a large extent controlled by them. These conditions have a definite effect upon the problem of mass transportation.

Short Length of Lines - The longest lines of Municipal Railway do not exceed 8½ miles in length, except for three out of 40 motor coach lines, most of the principal lines being considerably shorter. The average length of the 15 rail lines is 5.95 miles; for the 40 motor coach lines, 4.70 miles; for the 3 trolley coach lines, 6.02 miles; and for the 2 cable lines, 1.67 miles. As compared with these mileages, there are routes in local transit service in Los Angeles as high as 21 miles in length, with from 10 to 15 miles being common. Similarly, the lines of Key System Transit Lines, are on the average a number of miles greater in length than those of San Francisco.

This condition in San Francisco is of great advantage in working out the characteristics of operations and schedules and should go far toward offsetting the disadvantages of traffic congestion and narrow streets in the business area.

Such short lines under proper control should react in a highly favorable fashion toward improving the financial aspects of the operation. Conditions are ideal for turning equipment short of its route terminus on the outer ends so as to get two uses out of one vehicle, whereas otherwise only one would be possible without turnbacks. This feature of turnbacks, however, is something that is highly important when properly administered, but greatly confusing and disrupting to planned operations when exercised indiscriminately as is done at the present time on this property. It cannot effectively be carried out by rule of thumb or as the fancy may strike field supervisors. Its use must be incorporated in the basic components of a properly designed schedule pattern.

High Riding Habit - Throughout a period of many years it has been commonly accepted that the per capita riding habit on mass transit in the City of San Francisco has been far above the average. Actually it is second only to the City of New York in this country. The city topping the list, according to modern statistics, is Edinburgh, Scotland, which may be a demonstration of the thrifty characteristics of the people of that country who probably are more keenly alert to the much lower cost of transportation on mass transit vehicles than is possible through private automobiles.

This high riding habit is a very important contribution to any transit system. In San Francisco it is due to a number of considerations. The geographic and topographic characteristics of the city, as well as the short length of lines, contribute substantially to this condition. The people of San Francisco in their high average use of transit facilities affort one of the principal advantages in the business and are the envy of many other transportation properties that are not so favorably accepted.

Low Automobile Ownership - Another element that contributes to this favorable traffic condition in San Francisco is the relatively low automobile ownership per capita. This condition is probably due to the high concentration of residential units per acre of area. On the average, San Francisco has many more multiple dwelling units in the form of hotels, apartment houses, flats, rooming houses, and duplexes than will be found elsewhere in the country on an equal area basis. The residences of San Francisco are largely such because the people like the city life. Those persons who favor the more sumptuous and less concentrated home atmosphere in the main have taken residences in other communities adjacent to the city.

Even in the established residential areas of this city the concentration of population is heavy. Due to high property values and the limited space available for such purposes, a large percentage of residential lots are 35 feet in width, with many being 25 feet. Many of the larger multiple dwelling units, such as, apartment houses, hotels and flats, are not equipped with garage facilities for automobiles. Due to the short distances involved, many of such residents do not consider it necessary to own automobiles, as most everything they desire in the way of recreation, business and shopping is within reasonable distance by mass transit lines.

Automobile ownership is further discouraged for use in travel to and from the downtown area because of the scarcity of parking area and the congestion problem created by the predominance of directional traffic flow.

Population Saturation - When compared with other western cities, particularly the Los Angeles area and those located immediately across the San Francisco Bay, the population of San Francisco has not increased rapidly during past years. In the DeLeuw, Cather Report recently issued it is estimated that the maximum increase in population in San Francisco by the year 1970 will be 100,000 persons. This condition also has a direct bearing on the transportation problem of San Francisco—in a highly favorable direction. It means that the continuous demand for extensions of routes into newly developed areas, as commonly experienced in other cities of the west that are rapidly spreading out, will be absent or reduced to a minimum in San Francisco. If the above forecast is correct, it would appear that San Francisco is approaching a stage of population saturation.

GENERAL CHARACTERISTICS OF MUNICIPAL RAILWAY

General Description of Properties - Properties of the Municipal Railway of San Francisco consist of a widespread system of street car, electric trolley coach and motor coach lines radiating from the downtown section into the residential areas throughout the city as indicated by the two maps included in the appendix, one showing the routing of rail and trolley coach lines and the other, the motor coach lines. Due to the numerous changes being made currently those maps are only representative of true conditions as of the dates shown upon them.

For operation over the various routes the railway maintains a large fleet of street cars, trolley coaches and motor coaches varying widely in age and condition. With exception of very few, all rail cars are over-age and in need of replacement. Many of them were taken over from Market Street Railway upon consolidation and the

others were from the original purchases by Municipal Railway when the lines of that system were established. Trolley coaches are relatively of recent average age. They are of standard design and construction and standard capacity. Motor coaches of the system are largely of recently design and acquisition. There are some that have outlived their service life and are in need of replacement.

To maintain the facilities and operations, the railway possesses a fleet of service and repair equipment, most of which is antiquated and obsolete.

As to structures and facilities, the principal office and administrative headquarters are located in the Geary Division car barn. This structure was a part of Municipal Railway prior to consolidation. In addition there is one other division of the former Municipal Railway called the Potrero Division located at 17th and Mariposa to the south of the principal axis of the city. All other division facilities were formerly owned by Market Street Railway and taken over upon consolidation.

The two Municipal Railway division structures are sturdily built of reinforced concrete and of fairly modern design. Those other facilities taken over from Market Street Railway are in all instances extremely old and in most cases should be eliminated and replaced with modern structures.

In addition to the above described facilities, the railway also conducts a cable railroad operation, consisting of two lines, which was taken over from Market Street Railway upon consolidation. More will be said about these antiquated facilities at a later point in the report. The system operates almost entirely independently of the remaining operations and has been treated separately herein.

The general location of the various service maintenance, repair and storage facilities, as well as electric substations, is shown on the rail map included in the appendix.

Charter and Ordinance Control - This municipally owned street railway system is operated under jurisdiction of the Public Utilities Commission of the City of San Francisco and administered through the Manager of Utilities who has jurisdiction over all utility functions of the city and, in turn, through the General Manager of the Municipal Railway who is presumed to be in complete and direct charge of the facility and its operations.

In many respects the freedom ordinarily enjoyed in a privately owned transit operation is eliminated by reason of charter and ordinance control. To a large extent various of the system's functions are performed by other city departments and offices and actual extent of control by the General Manager is extremely limited as to policy and general administrative performance. The governmental organization and a description in detail of the various organizational features are covered more completely in a later section of the report.

Personnel of the railway are governed by rules of the city's Civil Service Commission. Two of the important items of ordinance control having a definite bearing upon the operations of the Municipal Railway are the so-called two-man car ordinance and the ordinance requiring perpetuation of the cable car system. Both of these present rigid restrictions upon the heavy economies that could otherwise be effected.

Revenue Production in Municipal Ownership - This system, as all other municipally owned utilities, provides a feeling of security on behalf of employees and management due to the knowledge that if non-profitable operations are incurred, the

deficit will be met from other sources. The same degree of incentive found in a privately owned and operated system is absent under public ownership and civil service regulation.

In a privately operated system the administrative officials and officers in responsible charge of the various functions of the business are held directly responsible for its profitable operation and in the event of their failure to carry out the duties expected of them, they are removable from office by action of the president or the Board of Directors. Similarly, the Board of Directors is responsible to the stockholders who have direct recourse in the event of dissatisfaction with administrative policies or financial showing.

With respect to this property, the maximum effort is not being exerted to maintain the proper relationship between revenue and cost of operations. The deficiencies in this regard are touched upon in greater detail at a later point herein. The difficulties involved in this regard are not entirely the responsibility of individuals in responsible authority. In a large measure the deficiencies found to exist are due to the system itself. In a municipally operated transit system there is a wide latitude in the selection of policy. Either the position can be taken that the property should be operated on a profitable basis regardless of service standards or that the public interest should be paramount and the highest type of service be provided regardless of the financial losses that may result. To arrive at an answer a determination on this matter of policy must be made.

Relationship to Other City Departments - As indicated above, the Municipal Railway in many of its functions is closely tied in with other city departments and in numerous respects is limited in the extent of its activities by reason thereof. Under the discussion of organization the detailed status of these conditions will be described.

In the appendix of the report there will be found several organization charts showing graphically the relationships presently existing. Division of responsibility with respect to the important functions of the railway between other city offices not directly related to the railway for the most part creates a highly unsatisfactory condition. It detracts from the responsibility of the chief administrative officer of the railway and divides the responsibility that should be his among numerous others. This tends to reduce the importance of the position of the General Manager.

Furthermore, it is obvious that another city office or department engaged principally on other projects will not give the same degree of consideration and attention to the problems of transportation that would be accorded them were the full responsibility in all of its aspects directly upon the shoulders of railway officials.

In certain respects this close tie between the railway and other city offices should result in benefits not ordinarily enjoyed by private operators. The success of transit operation generally depends to a large extent upon cooperation of the traffic control agency of the city in full coordination and with a full recognition of the importance of moving masses of persons in transit vehicles as compared with moving individuals in private automobiles. With the Police Department, the electric traffic control signal department, the Fire Department and the city's transportation operation all municipal activities, there should be found the highest possible degree of cooperation and coordination of effort. This does not exist, however, on the property to the extent that it should. The responsibility in this regard goes to sources beyond the Municipal Railway itself and falls upon those who are in a position of authority with respect to all of the departments involved.

Union Relationship - Although for bargaining purposes the Municipal Railway does not officially recognize labor unions to which its employees belong, considerable attention is given to the desires and dictates of such organizations. The problem is complicated beyond that ordinarily found on a transportation property in that there are two separate and distinct unions representing the operating employees. One of these unions represents the employees that were formerly a part of the Municipal Railway system prior to consolidation, and the other represents employees of the former Market Street Railway Company. Most harmonious affiliations between the two unions are not always evident.

Although there are no union agreements or contracts between the labor organizations and the railway as ordinarily found on privately owned properties, the relationship between management and labor is largely the same.

PART TWO

ADMINISTRATIVE AND OPERATIONAL ORGANIZATION

CHAPTER V

GENERAL CONCEPTS OF ORGANIZATION

GENERAL PRINCIPLES

Realization of the fullest measure of success of any business enterprise whether it be large or small or whether it be publicly or privately owned is directly dependent upon the proper design and construction of its organizational structure. This is true whether the primary objective is to conduct the business for profit or for maximum service to the public. Even in the latter case, although financial aspects may be subordinated to the paramount objective of public service, they most certainly constitute an extremely important part of the industry and to relinquish control or exercise indifference in administering the functions that result in expenditure of funds is to be wasteful of money that rightfully belongs to the public.

The same degree of responsibility for control of economics exists in public ownership as applies to private ownership from a material point of view and from the perspective of moral obligation, accountability for the trust endowed is greatly more far-reaching. Furthermore, in view of the complexities of governmental administration with its many departments, offices and division of functional responsibilities, the proper design of organization is mandatory if the public interest is to be fully protected.

UNIVERSAL IN APPLICATION

Good organization is not confined to any particular type of enterprise any more than good management is restricted to any one type of manager or any one system. A study of the organization of a number of successful industrial concerns will show that they all rest upon certain well-recognized clearly-defined principles and all follow or are adapted to certain basic types. By considering the underlying principles of organization and the types of organization, a structure can be built up and molded to suit the particular needs of the individual concern.

Organization may be considered as the structural element and management as the planning, directing, controlling and coordinating element. Organization means the structure or form of an enterprise and the arrangement of all parts thereof in a manner suitable for use or service. It further includes the individuals to carry on the work, together with their relationships to one another. Organization has reference to the business structure developed with the object of accomplishing a given purpose.

Management pertains to the planning, directing, controlling and supervising of all activities that through the use of the organization, the purpose may be accomplished.

Any business, and the Municipal Railway of San Francisco is a business, to be successful must be built around and according to certain basic principles. It must be built along definite and carefully planned lines so that the structure will be strong and will not collapse under its own growth and weight. It must be flexible to withstand the continually changing conditions. It must be conducted efficiently, in a humane way, economically, and for the good of the public. In other words, any business to prosper and survive must be well-organized and efficiently managed.

A well-constructed organization is characterized by a smooth flow of work and a definiteness of control with apparently little guidance on the part of management. This contemplates, of course, that all units are properly equipped with qualified personnel well-trained for their jobs and capable of carrying the responsibilities

of the offices and positions they hold. No organization, regardless of how well designed, will function properly if personnel are not properly qualified.

The organization should be built around the main functions of the operation and not around an individual or group of individuals. The nature of the business determines the main functions and thus of itself lays down the proper basis for organization. Functions can grow indefinitely, but persons are restricted.

For each concern there can be developed an ideal organization. This ideal should be constantly borne in mind and should only be deviated from with good reason, but it should not be made a hard and fast pattern which must be maintained at all costs.

One might study the various types and principles of organization and decide that a particular organization permits of a logical division of activities and good control and therefore should be adopted. Such a plan would be fine if there were no practical considerations standing in the way. In applying principles in a going concern one must keep constantly in mind the fact that in every concern there exists conditions that stand in the way of achievement of an ideal organization. Charter and ordinance provisions, politics, the personnel, the force of tradition, the views and opinions of influential executives, and so forth, must all be taken into consideration. As each enterprise has conditions peculiar to itself, a set of rules can not be set down that would be equally applicable to the organization of all.

FUNCTIONAL APPLICATION

As a first step in organization, each function, in other word—each activity required to carry on the business should be recognized and segregated. Like or complementary functions should then be grouped together so as to form several major groups. Each of these main groups will then be the basis for a major department. This gives a framework for a well-balanced clear-cut organization, does away with any tendency toward haphazard organization with the resultant overlapping and duplication of effort and concentration on one or more functions to the detriment or omission of others. The organization built around functions is strong and has logical channels for growth and development along each of the major fields of activity. The departments, divisions, and subdivisions of the enterprise and their functions should be clearly defined. The details of each department and its divisions should be logically and carefully coordinated so that each step of the work can be carried out to the best advantage in the shortest possible time.

With the major departments set up to take care of the respective groups of like and complementary functions and with a proper set up of divisions and subdivisions within each department, adequate care of each activity of the operation is assured.

CENTRALIZED CONTROL NECESSARY

Centralized executive control is absolutely necessary in order to have authority and responsibility definitely fixed. This does not mean that an executive should attempt to do everything himself. He should in turn delegate certain authority and responsibility to his subordinates. However, the purpose of good organization can be and usually is defeated when responsibility and authority are delegated to officials whose principal interest is divided among other functions.

Functionalization and departmentalization and centralized executive authority and responsibility establish a definite basis of control. Every man in the

organization knows what his job is, what he is responsible for, and to whom to go when there is a problem to be solved. The principle of centralized executive control with delegation of authority and responsibility requires the establishment of definite lines of supervision and a tapering of authority from the chief executive down to the junior executives and the supervisors in direct charge of the field workers. This gives a definite basis for discipline and coordination of effort, acts as an incentive for growth as it points out the possible lines of advancement and makes provision for understudies for each executive.

This latter is an important item. Otherwise there would be no logical man for advancement to fill an executive's position should he become incapacitated or resign for any reason. If the number of persons reporting directly to an executive is large and the problems they bring are diversified or complex, the executive becomes overburdened. He can devote neither the time necessary for a discussion and understanding of the various problems involved nor for the overall planning and coordination of the work of those reporting to him. Slowness of action, lack of coordination, inadequate planning, and poor morale are the result. This principle is merely the expression of the mental and physical limitations of human beings. A person, regardless of his ability and physical vigor, has definite time, intellectual and energy limitations. If an organization is to provide for adequate supervision and control, human limitations must be recognized and provided for.

At the head of the railway should be a constructive, broad-minded person with a well-balanced training and quality of leadership. Each subordinate should be selected on the basis of his particular training and personality and so placed that his abilities will be most fully used. This assures the strongest and most effective organization with the available personnel. The ideal plan for selection personnel is to analyze the requirements of each position and then find a man for that position whose qualifications measure up to the requirements.

With segregation of functions, the ability required to fill a position can be accurately determined, but it is quite a different matter to find men with just the right qualifications for each position, especially if there is only a certain given group of men from among whom selection can be made. For this reason it is frequently easier to build up an organization for a new concern than to reorganize an established one. In the latter case old habits must be broken—a difficult task, inertia must be overcome, and enthusiasm for the new order of things inspired.

The building of an effective organization requires the use of sound business judgment. No one plan can be applied indiscriminately to every operation. Each organization is a distinct problem in itself to which should be brought all available knowledge and experience in that particular line of business for which an organization is being provided.

First a complete statement must be made of the objectives in view. Next should come a thorough analysis of the entire proposition, of the product or service to be conducted, the labor, supervision, management, and all other requirements.

With the scope and duties of each department clearly defined and with a proper set up of divisions and subdivisions within each department, the final step is to pick the men best fitted for the work to head each department and subdivision, giving them sufficient authority to operate without interference and then holding them strictly accountable for results. Such an organization provides a good workable basis for management and is conducive of growth and permanency.

IMPORTANCE OF MANAGEMENT

The work of management is to plan, direct and control the operation of the organization and to weave together its various parts so that all factors will function properly and all persons cooperate and work together efficiently for a common purpose. With a competent man heading each department, division and subdivision and responsible for and in control of the activities involved, all working together as a team under the leadership of a strong executive, we have good management.

Good management is mandatory to successful operation. There are no substitutes for planning, directing and control. Management includes all those in charge of the direction of the work of others. It extends right down the line from the top management concerned with the operation of the railway as a whole and the responsibility for the conduct of the major departments, through the various superintending levels to the supervisors and foremen in charge of operators and shop workers.

MANAGEMENT IN PLANNING

The long-range welfare of the operation depends on the vision of top management. The execution of plans and the direction of everyday affairs depends chiefly upon those in charge of the various organization divisions. Planning is a fundamental function of management. Planning utilizes previous knowledge and experience, the practices of other systems, and the knowledge gained through experimentation and research in the solution of present problems and in preparation for the future. It implies deliberate, logical consideration, a thinking of one's way through a problem. With planning there first must be a knowledge of conditions to be met and then a determination of what should be done, how it should be done, when it should be done, and by whom it should be done. Top management has to do with the broad planning which is necessary to the existence and progress of the organization and coordination of the plans by those in charge of the various detailed phases, making sure that its objectives will be met adequately.

BROAD TYPES OF MANAGEMENT

There is a broad distinction between systematic and scientific management. Under scientific management, system is used extensively but not as the paramount feature. Scientific management includes with system a broad development of the human element and other factors associated with modern management. In order to get the true value out of knowledge, one must know what to use and how, when and where to use it. The man who jumps at conclusions is rapidly giving way before the man who attacks his problem from the scientific standpoint, who analyzes each problem and deduces the logical conclusion. Each problem can be and should be attacked scientifically whether it is standardizing typewriters, or regulating schedules. The scientific attitude, the attitude demanding facts not mere guesses or offhand opinions, is the keynote of modern management.

It is possible that a going concern can continue to function in violation of many of the basic principles set forth above. Management can be delegated to the individual platform men, coach operators, shop workers and office employees and the business will continue to function, but only for short duration if it is privately owned and only until public opinion forces drastic action if publicly owned. It is obvious that such a condition could not possibly endure under such extremes.

SUPPORT OF HIGHER AUTHORITY ESSENTIAL

One of the highly important and indispensable features of good organization and management is that after a man has been selected according to proper qualifications for a specific position, he be delegated with the necessary authority and then backed up to the fullest limit. If his judgment and ability prove to fall short of expectations and his decisions are deemed by higher authority to be continually injudicious, then he should be replaced but not repeatedly humiliated by reversal of orders which tends only to reduce his confidence and generate disrespect toward him on behalf of his subordinates.

No organization the size of Municipal Railway can satisfactorily function without an abundance of rules, regulations, specified standards of conduct and technical procedure, and clearly defined chain of command. None of those standards should be established until after careful and mature study, and after once placed into effect, they should be rigidly enforced by application of disciplinary action in accordance with a systematic procedure and graduated severity depending upon the nature of the infraction, the violator's record of past performance and the exercise of judgment based upon human understanding.

CHAPTER VI

SAN FRANCISCO MUNICIPAL ORGANIZATION

To more completely understand the organization and management problems of the Municipal Railway of San Francisco it is essential that its relationship to the City government as a whole and with the various individual department with which its functions are closely associated, be recognized. Therefore, a very brief explanation will be made in this chapter, supplemented by an organization chart in the appendix. (Chart I). Detailed elements of the railway organization have been covered under chapters of Part Three of the report.

San Francisco has a charter form of government and is the only combined City and County in the State of California. Its chief executive is the Mayor who is elected by the people for a term of four years and the charter provides that he coordinate and enforce cooperation between all departments of the City and County.

Municipal legislative matters are handled by the Board of Supervisors composed of eleven members, each serving a four-year term. They are elected at large rather than by districts at elections held each two years. The Board holds regular weekly meethings open to the public and its various committees function separately with respect to special matters delegated to them. The Board elects its own president who serves for a period of two years and who in turn names the memberships to the various committees.

The large number of offices, commissions, bureaus, courts and other subdivisions of the city government are shown graphically by Chart I of the appendix. This chart gives a general picture of the manner in which the San Francisco Municipal Railway relates to the various other municipal functions. Although the chart does not so indicate, the Municipal Railway is directly tied in with the City Attorney's Office, the Civil Service Commission, the City Purchaser, and the City Controller.

Aside from the functions falling under jurisdiction of the Utilities Commission, including the Commission itself, all other departments and offices are those that are ordinarily found, with perhaps some degree of modification, in standard city governments of the general character adopted by San Francisco.

Functions falling under supervision of the Public Utilities Commission are all of the type generally found to be conducted by private enterprise. Municipal Railway and the Water Bureau fall within the category of public utilities which normally are expected to function with the same general objectives as privately operated facilities, with the added advantage of greater economy that is possible through elimination of certain costs inherent to private operation but exempted from publicly owned enterprises.

It is the relationship between the railway organization and other city offices and departments as well as other bureaus under the Utilities Department that complicates to a considerable degree the functioning of the Municipal Railway. These considerations will be discussed in following chapters.

PART THREE

ORGANIZATION, PERSONNEL AND WORK PROGRAM

MUNICIPAL RAILWAY

CHAPTER VII

EXECUTIVE AND ADMINISTRATIVE

Proceeding upon the assumption that the financial aspects of Municipal Railway operation are not paramount in considering its value to the public, but that its primary mission is to perform a reasonably high standard of service to the public in the most efficient manner possible with fullest utilization of manpower and facilities with unnecessary expenditures of funds reduced to a minimum and with the closest possible control over all financial aspects, the problem reduces itself to the one issue of organization. In the sense it should be applied for purpose of this analysis, organization includes executive control, management, personnel and the work program.

In view of the expressed desire of the Board of Supervisors that special emphasis be placed upon the features of organization and work program, it has been considered appropriate to depart to some extent from the standard type of engineering report that is ordinarily directed principally toward the technical features of the project covered. Rather than to present a technical description of the operations, service and facilities in considerable detail separate from discussion, conclusions and recommendations, the two phases have been combined herein with the thought that the desired results will be more easily obtained by presenting the complete story with respect to each individual branch of the organization with cross reference to other related phases where necessary.

It would not be possible to obtain in true perspective a full realization of the magnitude of the railway operations without describing the manner in which that function fits into the general scheme of city government as a whole.

In weighing the importance of positions and offices one against the other within the city government, there must be established some standard of comparison. The logical comparison would be on the basis of the relative financial importance of the various functions or departments and their respective stature in terms of essential service to the public. There must also be drawn a distinction between the two definitely different classifications of public service. On the one hand there is that class which constitutes an inherent part of all city governments in the interest of protecting the health and welfare of the citizens, ordinarily on a non-compensatory basis through the expenditure of funds collected from the public as a whole through taxation of one form or another, and the other is that type of public service ordinarily referred to as a public utility which predominantly is conducted by private enterprise, but in some instances is owned and operated by municipalities or governmental subdivisions and operated for the purpose of providing service to the public on the basis of direct charge for service rendered at a price usually established so as to provide a sufficient amount of revenue to cover the complete cost of operations.

Many cities are entirely dependent for their public utility services upon privately operated industry, others, such as San Francisco, own and operate in varying degrees their own utility services. San Francisco owns and operates two of the major public utilities regarded as essential to any municipality—the mass passenger transportation operation and the water utility. In addition to these, it also is in the unique position of owning and operating its own hydro-electric power generating plant high in the Sierra Nevada mountains. These utilities are big business when compared with others throughout the country of like character operated by private enterprise. In their management and operation they can only function satisfactorily if the business is conducted along the same lines of efficiency and economy exercised in privately owned utilities that are subject to rigid control by governmental regulation either municipal, state, or federal.

This part of the report will, therefore, cover in considerable detail the features of organization primarily of the Municipal Railway, but also, to the extent considered necessary, the various related departments and functions.

UTILITIES COMMISSION

There are five members of the Public Utilities Commission appointed by the Mayor for terms of four years each. In contrast to other appointees of the Mayor, they cannot be removed from office except for cause and after proper hearing by the Board of Supervisors.

The Commission has general supervision over the Manager of Utilities and the various utility departments and bureaus reporting to him including the Municipal Railway; Water Department; Airport; Bureau of Light, Heat and Power; Hetch Hetchy Water Supply, Power and Engineering Bureau; and Bureau of Public Service.

The Commission meets in conference and holds public meetings each Monday. Matters of policy are discussed and policy determination is made for all five utility departments. The Manager of Utilities and the Director of the Bureau of Public Service also attend. The former brings matters of policy to the attention of the Commission and reports on the operations of the various utility departments.

At the regular weekly meeting of the Commission, open to the public, matters of policy are passed by formal resolutions. Members of the public are entitled to bring before the Commission matters pertaining to any of the utility departments. Such matters are usually taken under advisement by the Commission and turned over to the Manager of Utilities for investigation. After such investigation, the Commission reports its finding and decision to the public.

Including an occasional meeting with the Mayor and with the Board of Supervisors, it is estimated the members of the Commission devote approximately 200 hours a year to public utility activities, a majority of the time being spent on Municipal Railway activities and policy determination.

In the 1948-49 annual appropriation ordinance the following amounts were approved for the several utility departments:

Bureau	Amount	Percent
Bureau of Light, Heat and Power	$ 3,039,646	6.79
San Francisco Airport (Operating)	3,358,602	7.50
Municipal Railway (Operating)	19,328,030	43.16
Water (Operating)	10,776,500	24.07
Hetch Hetchy Water Supply	4,892,439	10.93
Hetch Hetchy Power (Operating)	3,380,000	7.55
	$44,775,217	100.00

These amounts are for normal operating expenses and do not include capital expenditures made under bond issues.

It will be noted that 43.16 per cent of total appropriation applies to the railway, putting it in first place of all departments under the Commission.

For the fiscal year ending June 30, 1948, railway revenue was in excess of $18,000,000 and represented 50.3 per cent of all revenue earned by the several departments. Hetch Hetchy and the Water Department combined brought in only $17,700,000 representing 48.6 per cent. These figures emphasize the importance of the railway when compared with the entire utility operating combine.

Although all of the above operations are properly classified as utilities, it is difficult to justify the grouping of them under one and the same management. Each utility is a separate entity, having its own peculiar problems of management and administration. Group policy cannot be made. Each individual problem of each utility must be carefully and scientifically analyzed. To perform the many functions and duties enumerated in the Charter, the members of the Commission must rely to a great extent upon the recommendations of the Manager of Utilities who by Charter is responsible for the management of all utilities, bureaus, and operations under the Commission.

The 1948-49 budget for the Public Utilities Commission and its general office requirements was approved in the total amount of $179,394. This appropriation is to cover cost and expenses of personal services, equipment, supplies, public relations, and other miscellaneous expense including personnel as listed on page 75 of the Annual Salary Ordinance 1948-49.

The Public Utilities Commission received the above amount by transfer of funds from the following departments:

Municipal Railway	$44,848
Water Department	44,850
Hetch Hetchy, Water Supply	44,848
Power Bureau	44,848
	$179,394

It is interesting to note that the Airport makes no contribution.

A brief reveiw of the various utility departments other than the railway reveals that in each instance the top executive has been selected by reason of his special qualifications and experience in the particular field to which he is assigned and similarly his immediate subordinates have likewise been selected by reason of special technical qualifications. Certainly the same amount of consideration should be exercised in connection with the railway and in view of the financial magnitude, even more so.

Reference to the table in the appendix showing earnings for the various transit operations in California shows that Municipal Railway holds approximately second place when compares with other large transit operations, in terms of earnings. It stands in high position in this regard when compared with transit operations throughout the country in many large cities of the east. This is important to keep in mind when considering the organizational problems and particularly the executive and managerial brackets of the chart.

It is particularly significant when comparing the qualifications and experience of executives of those many other operations, including even the smaller ones. Almost without exception the top executive has behind him many years of transportation operating experience. In many cases members of the boards of directors are transportation men.

Municipal Railway is of such size and importance that it justifies an executive and managerial organization at least equal in numbers of qualified officials as those many private operations. Numerous of them could be cited for comparison, but for sake of brevity reference will be made to only a few, all of which are comparatively self-sufficient within themselves as regards all important departmental functions.

There are none of material size that do not have, in addition to a working president, at least one vice president and many have as high as three or four. Among these are Capital Transit Company in Washington, D. C.; Key System Transit Lines in Oakland; Los Angeles Transit Lines in Los Angeles; Pacific Electric Railway Company in Los Angeles; San Diego Electric Railway in San Diego, and many others.

Municipal Railway of San Francisco, on the contrary, maintains no position of executive management according to commonly accepted standards of qualifications. Its Public Utilities Commission consists of members that are no doubt eminently qualified in their particular field of business activity but have no executive or practical background in transportation. The Commission compares with the board of directors of a transit operation except that such a board ordinarily has only one responsibility whereas the Commission is responsible for several.

MANAGER OF UTILITIES

The Manager of Utilities, who would compare with a president in private ownership, does not have transportation as his exclusive responsibility as would a transit president. He is responsible for several operations under Commission jurisdiction. The Railway and the Water Department are each sufficiently large to justify the equivalent of a president in private operation. Without passing judgment on the other utility bureaus of the city, it can be said with assurance that the Manager of Utilities cannot properly carry the responsibilities of the Municipal Railway together with the other jurisdictions assigned to the position. This is particularly true in view of the absence of a properly designed staff organization directly responsible for railway functions

The Manager of Utilities is appointed by the Public Utilities Commission and the Charter provides that he shall possess the necessary executive, administrative and technical qualifications for the office. He is the chief executive officer of the Commission and is responsible, subject to the approval of the Commission, for the management of all utilities, bureaus and operations under its jurisdiction. He is paid an annual salary of $18,000 and holds office at the pleasure of the Commission. Subject to the approval of the Commission, he appoints and/or removes the heads of departments and bureaus under the Commission, exclusive of the civil service provisions of the Charter.

The Manager has full power to administer the affairs of the Commission as chief executive officer and may, with the consent of the Commission, act as the head of any department or bureau created by the Charter or by the Commission.

GENERAL MANAGER

The General Manager of Municipal Railway is appointed or removed by the Manager of Utilities, subject to approval of the Public Utilities Commission. The Charter provides that the heads of utility departments and bureaus shall each possess the necessary executive, administrative and technical qualifications for their respective offices.

Although the position is appointive and is exempt from civil service provisions, it is included in the published classification of duties of positions in the municipal service under S-5, General Manager, Municipal Railway. The duties listed include, subject to administrative approval: Plans and directs the operations of the unified Municipal Street Railway System; the acquisition, maintenance and reconstruction of plants and equipment for transportation service, including rolling stock, power distributing systems, street car mechanical cables, cable winding machinery, electric power converting substations, structures and buildings; the maintenance of all cost

accounting and other records; make investigations and prepare reports relating to the choice of the type of equipment to be used on the various lines and outlines specifications therefor; develops policies to improve service or promote economy; and performs related duties as required.

A brief listing of the span of control of the General Manager is as follows:

A. Direct by Organization Chart
1. General Superintendent of Transportation
2. Superintendent of Equipment of Overhead Lines
3. General Claims Agent
4. Engineer, in charge of Track Department

B. Direct Not Shown by Organization Chart
5. Accident Prevention Committee

C. Established by General Manager - Contrary to Proper Unity of Command
6. Superintendent of Transportation
7. Assistant Superintendent of Transportation
8. Supervisor of Schedules
9. Superintendent of Equipment
10. Superintendent of Garages
11. Division Superintendents

D. Continued by General Manager from Chart dated April 1, 1948
12. Chief Instructor
13. Senior Accountant

E. Coordination Relationships - Established by Organization Chart
1. Director, Bureau of Personnel and Safety
2. Director, Bureau of Engineering
3. Director, Bureau of Accounts
4. Director, Bureau of Public Service

F. Immediate Superior
Manager of Utilities and Public Utilities Commission

G. Other Superiors (Control of Functions by Charter)
1. City Attorney
2. City Controller
3. Purchaser of Supplies
4. Civil Service Commission
5. Board of Supervisors

H. Other Relationships Established by Usage
Authorized representatives of unions representing various classes of employees of Municipal Railway.

The plan of organization adopted upon consolidation with Market Street Railway on September 29, 1944, as shown by Chart II in the appendix, established the position of General Manager, Municipal Railway reporting to and receiving orders from the Manager of Utilities. Reporting directly to the General Manager were the following nine departments:

1. Transportation Office
2. Transportation Field
3. Instruction
4. Accident Prevention
5. Equipment
6. Track
7. Auditing
8. Claims
9. Secretarial

The auditing Department also reported directly to the Bureau of Accounts of the Public Utilities Commission, thus creating a dual supervision situation. The General Manager had no authority or responsibility for the functions of public service or engineering. These two functions were assigned to the Bureau of Public Service and the Bureau of Engineering respectively. These Bureaus reported and were responsible to the Manager of Utilities.

On August 1, 1947, the organization chart was amended and published by the General Manager and approved by the Manager of Utilities. Under this revised system, Chart III, the General Manager had direct supervision and control over thirteen departments or bureaus, namely:

1. Bureau of Personnel
2. Bureau of Public Service
3. Bureau of Engineering
4. Bureau of Accounts
5. Equipment & Overhead Lines
6. Transportation
7. Schedule
8. Track
9. Claims
10. Physician
11. Training
12. Personnel
13. Auditing & Accounting

The General Manager, in turn, reported to and received orders from the Manager of Utilities. The four Bureaus listed above also at this same time appeared in the organization plan of the Public Utilities Commission reporting directly to the Manager of Utilities.

The next change in the plan of organization was published on April 1, 1948, Chart IV of the appendix. Except for the addition of an Accident Prevention Committee and the reduction of one transportation division, no other major changes were made. The Accident Prevention Committee was established reporting directly to the General Manager. This increased his direct span of control from thirteen to fourteen. Again the four bureaus of the Public Utilities Commission were placed under the control and supervision of the General Manager, thus continuing the dual supervision of the previous plan. In addition, other areas of dual supervision were established, namely:

1. The Bureau of Personnel and Safety and the General Manager both having direct control over training, personnel, and accident prevention
2. The Bureau of Accounts and the General Manager both having direct control over auditing and accounting

The present plan of organization was adopted on December 14, 1948, Chart V, which provides that the General Manager shall report to and receive orders from the Manager of Utilities. The previous thirteen departments reporting to the General Manager were reduced to only four, as follows:

1. Track
2. Transportation
3. Equipment & Overhead Lines
4. Claims

Not shown on the organization chart is the Accident Prevention Committee which was created by letter authority of the General Manager, dated November 5, 1948.

The General Manager has no direct control over the functions of training, personnel, and accident prevention. These functions are the responsibility of the Bureau of Personnel and Safety of the Public Utilities Commission. Neither does he have direct control over the functions of public service, engineering, and auditing and accounting. These functions are the responsibility respectively of the Bureau of Public Service, Engineering Bureau, and Bureau of Accounts of the Public Utilities Commission.

BUREAU OF PERSONNEL

The Bureau of Personnel and Safety is part of the general office of the Public Utilities Commission. Headquarters of the Director of the Bureau is located at Potrero Division. The Director is responsible to and appointed by the Manager of Public Utilities at a salary of $700 per month. The position is exempt from the classified service, is appointive and the occupant serves at the pleasure of the Manager of Utilities, with the approval of the Public Utilities Commission.

The Director is responsible for the personnel training and safety functions of the following City departments:

1. Hetch Hetchy Water Supply
2. The San Francisco Airport
3. Light, Heat and Power Bureau
4. The Water Department
5. Municipal Railway

He is a staff officer in his relations with the Manager of Utilities and an operating officer with respect to duties performed for Municipal Railway. There is no direct line of authority or control from the Manager of the Municipal Railway to the Bureau of Personnel and Safety. This, in effect, means that the Manager of the Railway has no direct control or supervision over the personnel training and safety functions.

The Director, Bureau of Personnel spends approximately one-half of his time on safety functions and one-half on personnel functions. About 70 per cent of his time is spent on the personnel training and safety functions of the Municipal Railway.

Municipal Railway provides the Director with one B-412 Senior Clerk-Stenographer and one B-408 General Clerk-Stenographer.

The Personnel Section of the Bureau is in charge of a Personnel Assistant, G-51, at a salary rate of $270-330. About 90 per cent of his time is spent on Municipal Railway personnel functions. His classification and pay rate is listed in the Budget, in the general office of the Public Utilities Commission, and his immediate supervisor is the Director, Bureau of Personnel and Safety.

The Personnel Section is divided into two subdivisions—the Leave Section and the Employment Processing Section. The Personnel Assistant exercises control and supervision over these two sections which are located at Geneva Division.

The Employment Processing Section is responsible for processing of new employees certificated by the Civil Service Commission and for the maintenance of certain personnel records. After the new employee has been processed he is sent to the Training Division if a platform employee, or to the appropriate department head if a clerical or shop employee.

The processing Section also issues and maintains records pertaining to free transportation passes which are issued every six months to all employees of the Municipal Railway. At the present time this totals approximately 3,590. All employees of the Municipal Railway who are retired by the Retirement Board for age or service are automatically issued a pass. In addition, passes are issued to other individuals on the written authority of the Manager of Utilities or the General Manager of Municipal Railway. The number of these passes is about 150 at the present time.

The Leave Section is responsible for processing all leave applications, the recording of sick leave accumulated and used, furnishing the timekeeping section with the correct leave status of individual employees each payroll period, and making home checks on employees reporting sick.

As all policies pertaining to sick leave, vacation leave, leave of absence without pay, disability leave, military leave, and educational leave are made by the Civil Service Commission, the duties of this section are limited to the clerical processing of the various types of leave requests and the maintenance of leave records.

With respect to sick leave the following procedure is in operation in the Municipal Railway: When an employee reports sick or fails to report for work, the Division or Department head fills out a sick leave report in triplicate and immediately sends the original to the Leave Section. When the employee returns to work, the second and third copies are completed, with the duplicate going to the Leave Section and the triplicate retained as a divisional or departmental record. Upon receipt of the original in the Leave Section, a form called "Report of Sick Leave Investigation" is prepared in triplicate and is given to one of two investigators. (These investigators are classified as S-111 Inspectors). Since this action is taking place on the day after the man has been reported absent, the investigator usually checks with the division or department head to ascertain if the employee has returned to work or is still absent. For those still absent the investigator makes a home call.

On his report the investigator will include information of non-medical nature, information as to type and kind of medical treatment being received by the employee, and any other pertinent information which might be grounds for approving or disapproving the employee's request for sick leave. The investigator leaves a Sick Leave Instruction Check List with the sick employee.

In the event the employee is not at home at the time of the call or if in the opinion of the investigator his sickness is doubtful or the nature of the sickness indicates a future inability to perform his duties efficiently, the investigator sends copies of his report to the Director, Bureau of Personnel and Safety, and to the employee's divisional or departmental head. Normal distribution is one copy for the Leave Section files and one copy to the examining physician who is a part-time employee on the Public Utilities payroll.

When the employee returns to work, the division or department head completes the duplicate of the sick leave form and sends it to the Leave Section.

For sickness over five days duration the process is controlled by civil service rules. A formal request is made by the employee, a physician's certificate is obtained and then the employee reports to the part-time physician. If everything is in order, the sick leave is approved over the signature of Director, Bureau of Personnel and Safety and General Manager of Municipal Railway.

Sick leave of less than six days duration is granted by the appointing officer or by department heads designated by him. An internal office form is used to approve or disapprove sick leave of less than six days duration.

At the present time there are two full time employees, classified as S-111 Inspectors, who perform the investigating duties listed above. They use their own private cars in this work and are reimbursed at the rate of 7¢ per mile with the monetary limitation of $50 per month.

Permanent employees are granted annual sick leave as follows:

10 days for 5-day work week
11 days for 5½-day work week
12 days for 6-day work week

Sick leave is cumulative to 6 months for monthly employees or 156 days for per diem employees. Monthly and per diem employees are granted sick leave beginning with the first day of absence. No physician's certificate is required until the absence exceeds 5 days. Platform employees are allowed full pay for sick leave from the first day off only if the illness exceeds 5 days. For the first 5 days or less no sick leave is granted to platform employees.

BUREAU OF ACCOUNTS

The Bureau of Accounts of the Public Utilities Commission is responsible for the accounting control of all PUC departments and bureaus. In particular, as applied to Municipal Railway, this bureau maintains appropriation control ledgers pertaining to all Municipal Railway accounts. All railway requests for expenditures and all railway financial transactions are processed by this bureau.

This bureau also prepares the Municipal Railway budget. Since the General Manager, Municipal Railway, has no orderly or planned system to process departmental annual budget requests, he leaves the actual budget preparation to the Director, Bureau of Accounts. Except for changes or requests brought to his attention by the General Manager, the Senior Accountant in charge of the Accounting Department and the Director of the Bureau of Personnel and Safety, the budget as prepared from year to year is almost a duplication of the preceeding year. Actually department heads within the Municipal Railway are seldom, if ever, given the opportunity to prepare a section or unit budget. Examples of this situation based on statements from supervisory personnel pertaining to the 1949-50 budget are as follows: (1) the Chief Instructor was not consulted as to the personnel needs of the instruction department; (2) the Superintendent of Equipment was not consulted on the number of car cleaners or shop personnel required; (3) none of the Division Superintendents were consulted as to the personnel requirements of a division headquarters; (4) the Chief Inspector, Central Control, had no opportunity to increase or decrease the number of employees in his section.

Even if the department heads within the railway were given the opportunity to present and justify a unit or section budget request, it would at least be a guess under the present budget procedure. In order to get the entire budget in final form to the Controller as required by the Charter by February 1, the individual section or unit request would need to be prepared in December and this would require a forecast extended into the future some 18 or 19 months.

The Director, Bureau of Accounts is located in City Hall and holds office at the pleasure of the Manager of Utilities. The position is exempt from civil service.

The Assistant Director, Bureau of Accounts is located at 425 Mason Street at the Water Department head office. This position is under the classified service of civil service and is filled by examination.

BUREAU OF PUBLIC SERVICE

The Bureau of Public Service is part of the general office of the Public Utilities Commission. The Director of the Bureau is appointed by the Manager of Utilities, subject to approval by the Commission. Although the position is exempt from the classified service provisions of the civil service rules, a specification covering the duties of the position is included in the classification plan of the Civil Service Commission. The duties of the Director, as included in the specifications, are, "Subject to administrative approval, exercises central control over complaint divisions of all utilities under jurisdiction of Public Utilities Commission; coordinates investigations of complaints and expedites the servicing thereof; has charge of and directs surveys looking toward service improvements and extensions of utilities and prepares reports thereon; prepares and is responsible for the publication of all matters of informational character, including the direction, composition, and dissemination of motion pictures, radio programs and newspaper and magazine articles dealing with utility policies and operations; makes recommendations for effectuation of economies in operations and for installation of procedures and programs for increases in revenues; makes recommendations to the Manager of Utilities regarding policy relating to employee relations and the improving of relations between the Commission and its employees and between the employees and the public; represents the Commission and the Manager of Utilities in matters of a confidential nature and make appearances in their behalf before public agencies and private organizations; and performs related duties as required."

The present Director has held the position since 1940. In addition to his regular duties, he acts as Chief Administrative Officer to the Manager of Utilities.

The Director spends about 75 per cent of his time on Municipal Railway public service matters and 25 per cent on the public service activities of the other Public Utility Departments. His office is located in Room 287 of the City Hall. To assist him, the following two full-time positions are carried in the Municipal Railway budget: one B-330 Photographer and one B-408 General Clerk Stenographer. The photographer is located at 425 Mason Street where there is a dark room. He is on call by all departments of the Commission. The B-408 General Clerk Stenographer is located at 1345 Turk Street. She devotes all of her time to collecting and preparing material for Trolley Topics which is the monthly house organ for Municipal Railway employees.

Complaints pertaining to service or employees of the railway received either by telephone or letter are channeled to the Chief Clerk of the complaint section located at the Geary Division. In the present organization the Chief Clerk reports to and receives orders from the Superintendent of Transportation. In addition the complaint section, because of functional activities performed, comes under the control of the Bureau of Public Service. Upon receipt of a complaint, the Chief Clerk completes Form 658 in quadruplicate. The original is filed by month for future statistical use; the second and third copies are sent to the appropriate Division Superintendent or Department Head for necessary action and reply; the fourth copy is sent to the Director, Bureau of Public Service. After investigation of the complaint, the Division Superintendent or Department Head records the details on one copy and sends it to the Director, Bureau of Public Service. On the other copy he records the employee's name and cap number and sends it to the Director, Bureau of Personnel and Safety.

After receipt of his copy, the Director, Bureau of Public Service either telephones or corresponds with the originator of the complaint. Present policy provides for a telephone return if the complaint originated by a telephone call or a letter if the complaint originated by letter. By policy the control over this system rests not with the Superintendent of Transportation but with the Director, Bureau of Public Service It is his responsibility to obtain an answer to every complaint and have it sent to his office. To perform this function, he is authorized to call Division Superintendents or Department Heads direct to check on delays or failure to report on complaints.

After a complaint has been completely investigated, the report sent to the Director, Bureau of Public Service, and the reply made to the originator of the complaint, the file is sent to the complaint section in the office of the Superintendent of Transportation. The majority of complaints are traceable to some violation of rules and regulations by the operating personnel with the end result that some disciplinary action is necessary—either a warning, a reprimand, or a suspension. However, the Superintendent of Transportation, who is responsible for overall discipline policy, does not keep the control file on the complaints received. In fact, when disciplinary action is required, the Division Superintendent must then make up an additional form in duplicate, sending one copy to the Superintendent of Transportation.

Procedure with reference to commendations is handled in the same manner as complaints with the following exception. A letter of commendation is prepared by the Director of Public Service for the Manager of Utilities' signature. The original is sent to the employee and the copy is sent to the complaint section where it is included in his master personnel record folder.

The Bureau of Public Service is responsible for the editing, publication, and distribution of all Municipal Railway reports and publications. No employee of the railway is allowed to give information to the press without clearance from that Bureau. In practice, all press releases are prepared and approved by the Bureau and issued to the press as an announcement by the Manager of Utilities or by the Public Utilities Commission.

The budget allowance 1948-49 for printing, supplies, etc., for the Bureau was $14,800. This small amount is the reason that the folder "Tours of Discovery, Municipal Railway" was discontinued in 1947. To perform a satisfactory public relations function would require considerably more than the fund allotted.

BUREAU OF ENGINEERING

The Municipal Railway has no engineering department. Its engineering functions are administered by the Bureau of Engineering of the Public Utilities Commission. The Bureau not only provides all engineering service for the railway, but also for the other four Public Utilities Commission departments. The railway pays for this function, but the General Manager has no control over the function or the personnel performing the function. This is not a satisfactory arrangement.

To a large extent the engineering requirements of the railway involve features that are peculiar to the transit industry and require the constant practical operating contact to provide appropriate background for most effective design and construction. Considerably more will be said on this subject in a later chapter.

CIVIL SERVICE COMMISSION

The Civil Service Commission is the employment and personnel department of the City and County of San Francisco, and determines appointments on the basis of merit and fitness as shown by the appropriate test. Personnel functions of the Civil Service Commission are as follows:

Classification - Jurisdictional

By Charter provisions certain positions are exempt from Civil Service examination. However, the Civil Service Commission will classify these positions as such positions are subject to classification for salary standardization purposes on the basis of duties and responsibilities of the employment, training, and experience required. The only position in the Municipal Railway exempt from examination is that of General Manager. However, there are certain other positions whose activities and functions pertain to the Municipal Railway which are exempt from examination. In the Public Utilities Commission these are:

1. Director, Bureau of Personnel and Safety
2. Director, Bureau of Public Service
3. Chief Engineer, Bureau of Engineering
4. Director, Bureau of Accounts
5. Manager of Utilities
6. In the City Attorney's Office, all assistant attorneys employed to handle Municipal Railway claim activity are also exempt.

Classification - Duties

The Civil Service Commission, in accordance with duties and responsibilities, allocates, and from time to time re-allocates, the positions to the various classes of the classification. There has been no complete classification audit made in the Municipal Railway since 1932. There are several situations in existence where individuals employed by the railway are working out of their classification or where the position is improperly classified. A few examples of these situations are listed below.

1. An S-102 Conductor performing full-time duties as a Clerk in the office of the Chief Inspector.
2. Two S-111 Inspectors performing full-time duties in the Leave Department making follow-up home calls on sick employees.
3. Three S-102 Conductors or S-104 Motormen performing full-time duties as S-111 Inspectors in the Central Control Section.
4. Five S-102 or S-104's performing full-time duties as S-111 Inspectors in the Training Department.
5. Several S-102 and S-104's performing full-time duties as S-111 Inspectors in the Dispatch Office of the several Division headquarters.
6. One B-454 Telephone Operator assigned to the General Manager's office and performing full-time clerical duties.

There are several examples of positions which indicate improper classification. The highest rated clerical job in the office of the General Manager is classified as a B-408 General Clerk-Stenographer. The top rated clerical job in the Bureau of Personnel and Safety is classified as a B-412 Senior Clerk-Stenographer. The top rated clerical job in the office of the Superintendent of Transportation is rated as B-516 Senior Clerk-Typist. The top rated clerical job in the office of the General Superintendent of Transportation is rated as B-408 General Clerk-Stenographer.

The time allowance for this survey did not allow making a detailed study of ech position within the Municipal Railway. It is assumed that there are other istances of improper classifications that would be uncovered by a complete and ailed classification audit. It is recommended that after a detailed functional anization plan has been prepared and adopted that the Civil Service Commission e a complete classification audit of all positions within the Railway. This up date classification plan will then provide a foundation for future entrance and motion examinations, establish a clear-cut line of promotion, and assist in making pensation schedules.

Selection and Certification

It is the duty and function of the Civil Service Commission to give exami- ions and prepare lists of eligibles. After an examination has been graded, the licants are placed on an eligibility list in order of their grade. In the tification process, the rule of one is used, that is, the top name is submitted the appointing officer. Unless this applicant declines the position, he is matically accepted by the appointing officer and placed on the payroll. When list of eligibles is in existence for an entrance position, the Civil Service ission may certify for temporary appointment an eligivle from another list ed appropriate, or authorize the appointing officer to make an emergency appoint- ment for a period not to exceed 90 days.

Probation

An applicant appointed to a permanent position in the Municipal Railway is probation for a period of six months. During this period the appointing officer terminate the employee. The Commission requires the appointing officer to make eport on each probationary employee and file it with the Commission during the th month of service. The report includes a recommendation for permanent appoint- or for dismissal. There is nothing to prevent the appointing officer from missing the probationary employee prior to the five-month report.

In addition to the fifth month rating form required by the Commission, the icipal Railway has established a rating for platform employees at the end of the cond month.

The probationary period is actually a part of the original testing program. llows management the opportunity to rate intangible factors and personal ities not determined by the formal written test. It is absolutely essential t during this period the employee be given every opportunity to learn the job and e himself efficient on the job, but it is more important that management make istakes in allowing probationary employees to obtain permanent status.

During 1948 there were 310 new appointments made in the classifications of 2 Conductors or S-104 Motormen. During this same period, 79 employments were inated during the probationary period. The majority of these terminations were by the Training Department on the basis of the employee's failure to pass the inal on-the-job training program. The detailed discussion of the training ow-up during the remainder of the platform employee's probationary period will befound under the classification "Training".

Employees in categories other than platform employees are rated only on the month rating form as required by the Civil Service Commission. The supervisory l within the railway must understand and know their responsibility in determining job performance of probationary employees. For a thorough and reliable check he probationary job performance, an effective service rating system is essential. railway should install a service rating system which will provide management with

a detailed rating or each and every probationary employee. A rating should be obtained on every probationary employee, irrespective of classification or type of work performed at the end of the first, third and fifth month.

Service Rating

Section 152 of the Charter provides that the Civil Service Commission shall establish an inspection service for the purpose of investigating the conduct of and action of appointees in all positions and of securing records of service for promotion and other purposes.

In the 45th Annual Report of the Civil Service Commission, the following is stated:

> "As a long range move designed to raise the standard of all services to the taxpayers of the City and County and to provide increased efficiency in governmental operation, the Civil Service Commission staff during the years developed an experimental service rating plan. Service rating is in line with the modern trend to further eliminate the 'Spoils System' from public service, to reward employee ability and merit, and to attract capable workers into the city's service as a lifetime career. It is provided for under Section 152 of the City Charter. The program was developed after exhaustive research and study and covered methods used in leading personnel agencies of the United States and Canada. It is expected that minor changes will be made to cover specific situations as they may arise."

The national survey proved conclusively that service rating has been of definite value in raising Civil Service standards and is desired generally by competent employees because it gives recognition to faithfulness and merit as factors in promotional examinations, as well as in eligibility for salary increases, transfers, leave of absence, and other Civil Service privileges.

The Commission voted unanimously to begin service rating on July 1, 1944, for probationary employees, and later will rate all Civil Service employees of the City and County at least once a year.

Permanent employees found to be inefficient or incompetent, under the ultimate plan, would be given adequate opportunity to improve, find other work for which they were better qualified, or be eliminated from the City payroll. However, adequate safeguards are provided by law to protect Civil Service employees' interests.

Both employee groups and various city department heads have indicated approval of service rating. The Commission hopes eventually to place the plan in complete operation for all permanent Civil Service employees, to the mutual benefit of the public and municipal personnel.

However, Rule 39 of the Civil Service Commission, adopted February 4, 1948, reads as follows:

> "When a valid and workable method of securing records and service of Civil Service employees is perfected, the Civil Service Commission shall establish, in accordance with Charter provisions, an inspection service for the purpose of investigating the conduct and action of appointees in all positions and securing records of service for promotion and other purposes....."

The primary purpose of service rating is to measure and evaluate as fairly and as objectively as possible each employee's on-the-job performance and give credit

for this job performance in making promotions. Another important purpose of the service rating is to make available for use in training and supervision an analysis of each employee's individual effectiveness, not merely shown as an overall rating but indicating on what work factors there is weakness and therefore need for additional training or supervision.

With due respect to the Civil Service Commission, there is no guarantee that a valid and workable service rating system borrowed from another governmental or private organization would be successful if installed in the City and County of San Francisco. The requirements for making an employee's service rating plan successful are:

1. Every employee in a supervisory position must understand and approve the plan.
2. Management must be entirely in accord with the plan.
3. A rating form that has been thoroughly and skillfully designed must be used.
4. Clear, specific and detailed instructions and directions must be given to and used by the rating supervisors.
5. A thorough and continued training program for the rating supervisors must be created.
6. Ratings must be used skillfully and sympathetically in correcting and training.
7. The service rating plan, its purpose, use and objectives, must be discussed with employee groups before the plan is adopted.

It is recommended that a service rating plan be established for all employees of the Municipal Railway and that the results of such plan be utilized in developing in-service training programs and that the Civil Service Commission give substantial weight to an employee service rating record in the overall promotional examination grade.

Promotions

Whenever it is deemed practicable, the Civil Service Commission provides for promotion in the Municipal service on the basis of such examinations and tests as the Commission may deem appropriate, and in addition gives consideration to ascertained merit and records of City and County service of applicant. The Commission announces in the examination Scope the next lower rank or ranks from which the promotion may be made. Except for the top supervisory positions, the promotion examination is usually weighted as follows:

900 Points for the written examination
50 Points for seniority of service (eligible with longest seniority getting the 50 points and other a percentage based on a sliding scale)
50 Points for ascertained merit (awarded to practically all employees eligible to take test).

Applicants are placed on an eligibility list in accordance with their grade in the promotional examination, and the certification rule of one is again used. This system fails to consider the relative service values of the employees. Promotions are not necessarily rewarded on the basis of job efficiency. The system precludes management from making understudy assignments of outstanding subordinates or from carrying on an understudy training program in the supervisory level. As an illustration, if the Municipal Railway wanted to train an understudy for the position of Supervisor of Schedules, it would be necessary to guess which one of the employees

in the Schedule Department would obtain the highest grade in the written promotional test. An employee can be the least efficient of all employees within a classification and yet if he obtains the highest grade in the promotional examination, the position would automatically be his.

Two arguments are often submitted to protect this promotional procedure. The first is that it removes promotions from the realm of political manipulation or appointment. However, if management is charged with the responsibility of efficiently operating and managing the Municipal Railway and is held accountable for this responsibility, promotions will automatically be made on the basis of ascertained merit or job performance. The second argument is that management can dismiss the employee during this promotional probationary period. Again it is safe to assume that an employee who is performing a satisfactory job in the lower classification would also perform a satisfactory job in the higher classification. It is not likely that the Civil Service Commission would accept the dismissal of the employee who obtained the promotive position because of obtaining the highest grade in the promotional test on the grounds that he wasn't doing the job as well as somebody else might do it. Over and beyond these reasons the factor of morale must be considered in this discussion. One of the reasons for low morale with the Municipal Railway is directly traceable to this factor of making promotions on the basis of examinations, without giving due credit for ascertained job performance.

CITY ATTORNEY

The Charter establishes the City Attorney as the legal advisor of the Public Utilities Commission. In addition to the normal type of city legal work, such as, review of contract and preparation of legal documents, the City Attorney handles all claims, both property and personal injury cases, which are litigated and are in the process of suit.

A claimant who has filed a claim for damages against the Municipal Railway also has the right to file suit. When a claimant files a suit for damages against the railway, the entire case file is forwarded to the City Attorney's office. The case is assigned by the Chief Deputy City Attorney to any of the lawyers employed in the City Attorney's office. After the case is assigned, the one receiving the assignment reviews the case, and if necessary, utilizes the services of the Senior Claims Investigator, or the Claims Investigator assigned to the Attorney's office, to make further investigation of the case.

Suits involving amounts from $1 to $50 are tried in the Small Claims Court. Suits from $51 to $2,000 are tried in the Municipal Court, and suits from $2,001 up are tried in Superior Court. Many cases are settled out of court by agreement between the City Attorney's office and the claimant. This settlement, although it must be approved by the Public Utilities Commission, does not require the approval of the General Manager or the General Claims Agent. At the present time, whenever a case is settled out of court, the amount must be approved by a committee consisting of three specified Deputy City Attorneys.

In 1948 there were 403 suits disposed of by the courts, totalling $7,571,315 in claims. Of that amount $1,007,836 was awarded by the courts, being 13.3 per cent. On December 31, 1948, there were 649 suits on Municipal Railway matters pending in the City Attorney's office, representing an amount of $11,801,207.12. In the 1948-49 budget $98,851 was approved to cover costs of services and expenses of the City Attorney's office for handling suits against Municipal Railway. Payment is made by budget transfer on a Work Order basis.

The classifications covered by the allocation of $98,851 includes four stenographers and ten attorneys as follows:

No. of Persons	Class No.	Classification
4	E-410	Legal Stenographer
3	K-6	Senior Attorney, Civil
5	K-8	Principal Attorney, Civil
2	K-10	Head Attorney, Civil

In making case assignments, the Deputy City Attorney assigns Municipal Railway cases to all deputies, rather than to the deputies assigned to the budget positions paid for out of the transfer of funds. The reason advanced for this assignment policy is to keep all deputy city attorneys trained and experienced in trial work.

Deputies in the City Attorney's office may handle private practice in addition to their full-time employment with the city. Inquiry indicates that approximately one-third of the attorneys carry on outside private practice, and in those cases the extent of such activities is very limited.

CITY CONTROLLER

The City Controller is appointed by the Mayor subject to confirmation and approval of the Board of Supervisors. He exercises general accounting and auditing supervision over the Municipal Railway. Specifically, as indicated by the Charter, he prepares monthly a report showing the allowances, expenditures, encumbrances, and the unencumbered balance of each revenue and expenditure appropriation. He maintains the necessary accounts and accounting procedures of:

1. All budgeted revenues and appropriations, together with additions or transfers thereto, and to show at all times the amount of encumbrances, expenditures or transfers therefrom, and the balance therein.
2. All revenues accrued and liabilities incurred.
3. All cash receipts and disbursements.
4. All transactions affecting the acquisition, custody, and disposition of values.

Budget estimates for the Municipal Railway are compiled by the Bureau of Accounts of the Public Utilities Commission. The Budget estimates, after approval by the General Manager and the Public Utilities Commission, are filed with the Controller not later than the first day of February of each year. The estimates are checked for form, accuracy and completeness by the Controller and transmitted to the Mayor not later than the first day of March of each year. The Controller, in transmitting to the Mayor, includes a summary and recapitulation to show the amount of proposed expenditure and estimated revenues in comparison with the current and previous fiscal year's expenditures and revenues.

In particular the Controller exercises control over certain functions such as approval of purchase orders, approval of payrolls, approval of allotments within an appropriation, and approval of intra-transfer of funds. With reference to payroll approval, a time roll is prepared in the timekeeping section of the Auditing and Accounting Department, Municipal Railway. This roll lists all employments by classification and rate of pay, showing the actual days worked or the proper symbols to indicate absences with or without pay. This roll is approved and signed by the General Manager and sent to the Bureau of Accounts, Public Utilities Commission, for

review. It is then forwarded to the Manager of Utilities for approval and signature. One copy of this time roll is sent to the Payroll Section, Civil Service Commission, where the employments are checked for legality of appointment. One copy is sent to the Controller who checks it for accuracy. The Controller's office computes the employees' pension deduction and makes the necessary computations.

After the time roll is approved by the Secretary, Civil Service Commission, a payroll is prepared, individual warrants are drawn, and the proper appropriation fund is encumbered. The Controller also holds individual payroll checks which have been attached. He also prepares an accumulated earning for each employee as required by Internal Revenue Law. The Controller transmits the completed payroll and individual warrants to the Municipal Railway.

After the yearly budget has been adopted and the necessary appropriation ordinance has been passed, the Controller sets up an allotment pertaining to each appropriation, usually on a quarterly basis. If an allotment is desired, other than on a quarterly basis, it must be requested by the Municipal Railway and approved by the Controller. For example, if the appropriation ordinance provided a total amount of $100,000 for materials and supplies, the Controller would set up an allotment against this total of $25,000 per quarter. If the Municipal Railway requires more than $25,000 during any quarter, the procedure listed below is followed:

1. Form 337, "Request for Additional Allotment," is filled out by the Accounting and Auditing Department.
2. Request is approved and signed by the General Manager.
3. Request is reviewed and approved by the Bureau of Accounts, Public Utilities Commission.
4. Request is approved and signed by Manager of Utilities.
5. Resolution is passed by Public Utilities Commission, requesting such an allotment.
6. Final approval by the Controller.

If the Municipal Railway has exhausted the funds from an appropriation, desires additional funds in this same category and has unexpended funds in another appropriation, a request for intra-transfer of funds is made according to the following procedure:

1. Form 307, "Request for Intra-Fund Transfer," is made up by the Accounting and Auditing Department.
2. Approved and signed by General Manager.
3. Reviewed and approved by the Bureau of Accounts, Public Utilities Commission.
4. Approved and signed by Manager of Utilities.
5. Resolution requesting Controller to honor the request passed by Public Utilities Commission.
6. Final approval by Controller.

If the Municipal Railway has expended all funds from a particular appropriation and there exists no appropriations from which a transfer can legally be made, it is necessary to obtain a supplemental appropriation. This procedure requires:

1. Statement of necessity for funds, prepared and signed by the General Manager.
2. Reviewed and approved by the Bureau of Accounts, Public Utilities Commission.
3. Approved and signed by the Manager of Utilities.

4. Public Utilities Commission, by resolution, requests the Mayor to recommend to the Board of Supervisors the enactment of the necessary ordinance.
5. Review and approval by the Mayor.
6. Review and passage of ordinance by the Board of Supervisors.

Other items which are referred to the Controller for approval before action can be taken are contracts, work orders either inter-departmental or intra-departmental, and warrants for claim payment.

The Controller makes a yearly audit of the Municipal Railway accounts. To perform this function, an independent private accounting firm is employed, on a contract basis, by the Controller. The annual budget of the Municipal Railway includes $5,000 for transfer to the Controller to cover the cost of this annual audit. All other services, as listed above, are performed without charge to the railway.

PURCHASING DEPARTMENT

One of the departments under the Chief Administrative Officer of the City is the Purchasing Department. This department includes the functions and personnel of the Bureau of Supplies, the operation of the central stores and warehouses, and the operation of stores at Municipal Railway garages and shops. The Purchasing Department is administered by the Purchaser of Supplies who is appointed by the Chief Administrative Officer and holds office at his pleasure.

The Purchaser of Supplies purchases all materials, supplies, and equipment of every kind and nature and enters into agreements for all contractual services required by the several departments and offices of the City and County. Within the Purchasing Department there are several employees who are assigned the function of processing and handling Public Utility requisitions. These employees, although under the direct control and supervision of the Purchaser, are paid from funds transferred from the Municipal Railway budget on a work order basis. These positions are as follows:

No. of Persons	Class No.	Designation
1	B-368	Senior Assistant Purchaser of Supplies
1	B-366	Assistant Purchaser of Supplies
1	B-408	General Clerk-Stenographer
3	B-512	General Clerk-Typist

These employees, in addition to processing purchases for the Municipal Railway, also process purchases for other public utility bureaus and departments, however, the Municipal Railway is the only department of the Public Utilities Commission paying for the above employees.

The cost of the overall purchasing service has increased from year to year as follows:

Year	Amount
1945-46	$55,322
1946-47	58,916
1947-48	61,888
1948-49	71,906
1949-50	73,273 (Estimated)

In addition to the above classifications, there are eleven B-352 Storekeepers and three B-354 General Storekeepers who, although part of the personnel of the Purchasing Department, actually perform services in the various stores located throughout the Municipal Railway properties.

The purchasing procedure as established by Charter provisions and usage is as follows:

The purchase requisition, based upon departmental need, is prepared in the Auditing and Accounting Department. The Senior Accountant has authority to sign for the General Manager. In practice, except for minor items, he discusses the requisition with the General Manager. It is then forwarded to the Assistant Director, Bureau of Accounts, Public Utilities Commission, who is located at 425 Mason Street. He is authorized to approve requisitions up to $100 and sign for the Manager of Utilities. In this case the requisition is immediately forwarded to the Purchasing Department. If over $100, the requisition is forwarded to the Director, Bureau of Accounts who is located in the Public Utilities General Office, City Hall. The Director has authority to approve for the Manager of Utilities, up to $500. Any requisition over $500 must be signed by the Manager of Utilities. The completed requisition is then sent to the Purchasing Department.

Out of six typical requisitions examined in the office of the Purchaser of Supplies, four were typed February 21, 1949, and two were typed February 18, 1949, yet all six were received by the Purchaser on February 25, 1949, at 4:41 p.m. The time lag between preparation of the requisition in the Municipal Railway to receipt in Purchasing Department averages five to seven days.

Upon receipt of the requisition in the Purchasing Department, it is routed to the desk of the Senior Assistant Purchaser of Supplies who checks it as to form and signature. It is passed to the Assistant Purchaser of Supplies who prices the item. If the price is over $25 and less than $1,000, at least three bids or quotations must be obtained. In cases of emergency upon approval of the Chief Administrative Officer, the purchase may be made on the basis of informal bids. Vendors are usually allowed five days from date of notification to submit a bid on an item costing less than $1,000.

After obtaining at least three bids on an item, the purchase order is ready for preparation. An original and seven copies are made with the original going to the office of the City Controller where certification is made that funds are available. The original is machine signed by the Controller and Purchaser of Supplies and returned to the Purchasing Department where it is mailed to the low bidder. This procedure takes from ten to fifteen days for completion.

The procedure for making a purchase over $1,000 is more detailed and time-consuming. A notice of acceptance of bids is published for two consecutive days in a local newspaper. The time allowance for submission of bids varies from item to item, depending upon the requirements of the specifications.

After receipt and opening of the sealed bids, they are tabulated and sent to the Manager of Utilities. Usually this is done only in the case of items which are highly technical in nature and on which the department drew up the original specifications. If the department does not recommend the acceptance of the low bid, a detailed statement must be prepared giving reasons for the rejection of the low bid and justification for acceptance of a higher bid. The Purchaser of Supplies makes the final decision. He may follow or reject the recommendation of the using department. After the award decision has been made, a written contract must be obtained

from the vendor. After the contract is signed, the purchase order is made up and distributed in the same manner as above. This procedure takes a minimum of 30 days to complete. A simplified flow chart is as follows:

PURCHASING PROCEDURE FLOW CHART

Department and Location	Function
Railway 2600 Geary Blvd.	a. Required - 15 Sheets of Aluminum b. Requisition made to stores c. Not in Stock - Request forwarded to
Auditing & Accounting Dept. 2600 Geary Blvd.	a. Requisition typed b. Proper account encumbered c. Approved by General Manager d. Forwarded to
Asst. Dir. Bur. of Accts., PUC 425 Mason Street	a. Encumbers appropriation b. Approves for Gen. Mgr., PUC, if less than $100 c. Sends to Purch. Dept. if (b) applies d. If (b) does not apply, forwards to
Dir. Bur. of Accts., PUC City Hall	a. Approves for Mgr. Util. if under $500 b. Sends to Purch. Dept. if (a) applies c. If (a) does not apply, gets approval of Mgr. Util. d. Forwards to
Purchasing Dept. City Hall	a. Time stamped b. Sends to Sr. Asst. Purch. of Supplies c. Prices or sealed bids obtained d. Purchase order typed e. Original of Pur. Order forwarded to
City Controller City Hall	a. Approves availability of funds b. Signs original c. Forwards to
Purchasing Dept. City Hall	a. Distributes copies b. Sends original to Vendor
Vendor	a. Delivers material to designated location b. Forwards invoice to
Purchasing Dept. City Hall	a. Holds invoice pending report of delivery b. Forwards report and invoice to
Controller City Hall	Makes payment to vendor

The extent to which a Municipal Railway should be subjected to the central purchasing agency of city government is open to controversy. In addition to the Purchaser of Supplies who controls all purchasing functions, the Bureau of Accounts, Public Utilities Commission, has created certain unnecessary and time-consuming check

All in all many economies would be effected if the railway had its own purchasing department and stores. To subject the railway to centralized purchasing of specialized railway equipment and supplies violates the management principle of unit responsibility and causes a great impairment of efficiency.

CHARGES AGAINST MUNICIPAL RAILWAY

Charges against Municipal Railway for services performed by other departments as included in the 1948-49 budget are as follows:

Public Utilities Commission, Bureau of Engineering

Budget estimate 1948-49	$69,112.00

Monthly bills from Public Utilities Commission charged to Railway	Nov. 1948 Charges	
Acct. 1 Suptce Way & Structures	$ 5,418.70	60%
Acct. 29 Suptce of Equipment	2,709.37	30
Acct. 45 Suptce of Power	903.12	10
Total	$ 9,031.19	100%

Public Utilities Commission

The salaries and expenses of the Public Utilities Commission are allocated to four municipal departments. Budget estimate for 1948-49 for railway proportion - $44,848.

Monthly notification to Municipal Railway by PUC Bookkeeper charged to Acct. 83, 88d and 89.

Charges for period 7/1 to 11/30/48 as follows:	
Acct. 83 Salaries & Expenses - General Office	$14,550.81
Acct. 88d Sick Leave Medical Fees	2,231.25
Acct. 89 Miscellaneous General Expense	875.00
	$17,657.06

Purchaser

Budget estimate 1948-49	$73,000.00

1/12 of this amount charged by Railway monthly to Acct. 95, Store Expense. Actual cost of store labor is accumulated on a work order and adjustments made quarterly to Acct. 95.

Charges to Acct. 95 for the period 7/1 to 11/30/48	
5 months @ $6,084.08	$30,420.42
Less adjustment of work orders 7/1 to 9/30/48	1,102.54
Net charge 11/30/48	$29,317.88

City Attorney

Budget estimate 1948-49 $98,851.00

1/12 of this amount charged by Railway monthly to Acct. 1290 92C, Injuries and Damages. Monthly charge $8,237.58

Controller

Charge which is for cost of outside audit of Railway accounts is carried in Acct. 89, Miscellaneous General Expense.

Budget estimate 1948-49 $ 5,000.00

1/12 of this amount charged monthly to acct. 89. Monthly charge $416.67.

CHAPTER VIII

TRANSPORTATION OPERATIONS AND SERVICE

Under the heading of this Chapter fall those elements of operation that are predominantly controlling in their effect upon the financial status of the Railway and the degree of satisfaction or displeasure with which the general public appraises the service. Conditions found to exist in this phase of the business are a direct reflection of the extent to which the executive and managerial offices and the suitability or deficiencies of organization.

It should be evident in view of the preceeding chapters that there are basic flaws in the organization and chain of command and the showing of this chapter bears out the contention.

POLICY AND MANAGEMENT

As has been pointed out previously the magnitude of operations of the Municipal Railway of San Francisco is such as to justify an executive and managerial staff equivalent to the most efficient to be found in private operations wherein the full responsibility for all phases of the enterprise are centralized within control of the transportation organization. Obviously such is not the case and as a result, together with numerous other contributing factors, the railway is operated at a degree of efficiency considerably below that usually found on other properties of like size and importance.

The position of General Manager is the highest full time position devoted entirely to Railway matters, on the organization chart. There is no other official of higher rank on the Railway and therefore, the position is equivalent to that of President on most other transit properties. Whereas it should carry with it a wide latitude of executive and administrative control, the position is shorn to a large measure of such authority by division of responsibility with numberous other City offices and departments that are only indirectly interested in Railway affairs and by exercise of authority by the Manager of Utilities.

Exercise of executive control and policy making falls largely upon the shoulders of others than the top executive of the Railway. The General Manager is the top executive in name only and regardless of the individual person who might hold the position, it can never be properly administered under the present system of organization.

Even in the exercise of disciplinary measures, which shall properly be administered by Division Superintendents, the General Manager is subject to reversal of his rulings by the Manager of Utilities. A recent incident relative to infraction of operating rules in the Twin Peaks Tunnel throws greater emphasis upon the inconsistency of organization and authority. Regardless of the merits of the case so far as degree of discipline is concerned or the guilt of the accused, the fact that the General Manager was overruled by the Manager of Utilities is definite indication of weakness in the chain of command and understanding of the basic elementary standards of management practice.

It is fundamental in the transit industry that division superintendents should be charged with exercise of disciplinary measures relative to employees under their command. Provision is usually made for a means of appeal, it is true, but on such simple infractions it is rare that the top executives are brought into the enforcement functions. In this instance over a matter involving smoking and other rules of like character, virtually the entire executive and managerial staff of the Railway was present at the appeal hearing together with the Manager of Utilities and one

of the Commissioners. After decision was made by the Manager of Utilities reducing the penalty, the matter then went to the entire Commission for final decision. This is equivalent to the Board of Directors, the President, the Vice President and the entire operating management staff of a private operation. It casts unfavorable reflection upon all members concerned.

GENERAL SUPERINTENDENT OF TRANSPORTATION

Under the direct control and supervision of the General Manager, according to the organization chart, is an S-134 General Superintendent of Transportation with office located at 2600 Geary Street. He is assigned one S-408 General Clerk-Stenographer. Quoting from the Classification Plan his duties and responsibilities are:

> "Under general administrative direction: Directs the preparation of all operating schedules and supervises the maintenance of such schedules in the transportation service of the unified street railway system of the Municipal Railway; directs and is responsible for the making of traffic checks and preparing reports thereon; develops operating schedules for unification of street railway systems and improvement in transportation service; directs the assignment of personnel, signups and work schedules; directs operations of rolling stock for most effective use; supervises disciplinary control over all employees engaged on car and bus operations; and performs related duties as required."

A review of the organizational chart indicates that the General Superintendent of Transportation has direct control and supervision over the Schedule Department, but in actual practice supervision and control of the Schedule Department is handled by the General Manager. It is difficult to ascertain the exact responsibility of the General Superintendent of Transportation pertaining to the schedule function inasmuch as the General Manager contends that he actually reviews and approves all schedules and schedule changes. In practice it creates for the Supervisor of Schedules a broken line of authority and places him in a position of having two superiors.

The organizational chart also indicates that the General Superintendent of Transportation has direct responsibility for and authority over Central Control, which section includes all of the line inspectors. Actually the line inspectors supervise and maintain the schedules in operation, make turnbacks of street cars and buses in unusual or emergency cases, and make reports pertaining to employee violations of existing rules and regulations. The reports which the inspectors make on service and violation of rules by operating personnel are forwarded to the appropriate Division Superintendent and the second copy is sent to the Superintendent of Transportation. In day to day operations the immediate superior of the Chief Inspector is the Superintendent of Transportation, although the organization chart shows the General Superintendent of Transportation as his immediate superior. Again the principle of unity of command is violated and the Chief Inspector is in a position of receiving orders and instructions from two superiors rather than one.

Reviewing the organization chart, the General Superintendent of Transportation is shown to have direct control and supervision over the Superintendent of Transportation. In actual practice the Superintendent of Transportation reviews and supervises the disciplinary control over all platform employees and reports not to the General Superintendent of Transportation but rather to the General Manager. The General Superintendent of Transportation when specifically asked what authority he exercised in relation to the disciplinary control or disciplinary policy replied that he had none and further stated that all such control and supervision was in the

hands of the Superintendent of Transportation. In fact, although the chart indicates a direct line of authority between the General Superintendent of Transportation and the Superintendent of Transportation, it was impossible to find examples of where the General Superintendent held the Superintendent accountable or had issued direct orders to him pertaining to functions or activities of the Transportation Department.

There is an obvious lack of delegation of authority from the General Manager to the GeneralSuperintendent of Transportation. This latter position, second in top command, should carry a large part of the managerial load and should be equipped to assume full responsibility in absence of the General Manager. Proper organization would derive full and essential assistance from the General Superintendent who in turn should administer the functions of lower echelons through definite lines of channelled authority. Actually, there appears to be much question as to the extent of responsibility of the General Superintendent. This same condition exists at several lower levels.

The General Manager should assign to the General Superintendent of Transportation the necessary responsibilities, duties and functions to properly and efficiently administer this department, such responsibilities to be specific, clear-cut, and fully understood. Each employee in the Transportation Department should know to whom he reports and who reports to him and should be made responsible to one and only one superior. In delegating the responsibility for management, the General Manager must also give the General Superintendent of Transportation the authority necessary to perform the function.

The position of General Superintendent if it is to be retained should be administered in such manner as to attain the maximum results. The practice presently followed tends to indicate a lack of confidence on behalf of the General Manager in the General Superintendent.

SUPERINTENDENT OF TRANSPORTATION

According to the organization chart the Superintendent of Transportation should report directly to the General Superintendent, but in actual practice the General Superintendent is by-passed and the Superintendent reports directly to the General Manager. In effect, this deviation from proper chain of command which is condoned by the General Manager renders the position of General Superintendent innocuous and superfluous and definitely weakens the organization. It tends to reflect upon the position of General Superintendent and is not conducive to proper respect for authority on the part of his subordinates.

Although division disciplinary control and clearance is supposed to be the function of the Superintendent of Transportation, the General Manager assumes the responsibility of review and decision personally, thereby relieving his second subordinate of his proper duties and loading himself with details he should avoid which divert attention from more important functions commensurate with the importance of his position.

The Superintendent of Transportation also directs the assignment of personnel, signups and work schedules throughout the divisions, again performing a function, without control or supervision, that normally should be the responsibility of the General Superintendent of Transportation. The Superintendent of Transportation is also in charge of the Complaints Section and, in addition, has the master personnel cards of all Municipal Railway employees within his office.

Directly under the Superintendent of Transportation is the position of Assistant Superintendent of Transportation. In practice the Assistant Superintendent

performs many special and varied duties. These duties include accident prevention, making recommendations on special service requests, checking standards of service, checking equipment and the condition of equipment, and handling liaison matters with the Police Department. In performing these services, he takes orders from three superior officers, the General Manager, the General Superintendent of Transportation, and the Superintendent of Transportation. Again we find a situation where an employee is subjected to orders from more than one superior. If the chain of command operated as the organization chart intended, all problems and direct control of the divisions would funnel to the Assistant Superintendent of Transportation, then to the Superintendent of Transportation, and then to the General Superintendent of Transportation. To say the least this would provide an inefficient and costly type of administration.

In actual practice the position of Assistant Superintendent of Transportation is by-passed and the direct control in most instances of the divisions is through the Superintendent of Transportation and then to the General Manager.

This form of organization, even if it were functioning according to the chart, is not consistent with proper procedure. The line of command is in series with four top managerial positions in control of the most important functions of the Railway, each one presumably reporting singly to the next one in higher authority. It is a basic principle of organizational design that the functional organization and authority should pyramid so that each executive or managerial officer will be in charge of two or more subdivisions of the business.

Under the present plan of procedure any one of the three positions of General Superintendent, Superintendent and Assistant Superintendent, could be eliminated. This, however, is not the entire solution. What is needed is a major revision in the organization with proper delegation of responsibility and authority and a tight rein to enforce the full discharge of duties on behalf of each officer in accord with a clearly-defined classification of responsibilities.

DIVISION SUPERINTENDENTS

General Functions

Reference to Chart V of the appendix indicates that the five Division Superintendents are under the direct control and supervision of the Assistant Superintendent of Transportation. However, the usual practice of the Division Superintendents is to report to and receive orders from the Superintendent of Transportation. This existing line of authority created by usage is often violated. A Division Superintendent from time to time receives orders or instructions from the General Manager, the General Superintendent of Transportation, the Assistant Superintendent of Transportation, the Director of the Bureau of Personnel and Safety of the Public Utilities Commission, and the Manager of Utilities.

A Division Superintendent has direct control over certain subordinates, including a Dispatcher on each of three consecutive shifts and all the platform personnel assigned to his division. Besides these duties a Division Superintendent coordinates relations with the Timekeeping and Revenue Sections of the Accounting and Auditing Department, with the Track Department, the Training Department, the Accident Prevention Section, the Car House Foremen, the Claims Department, the Complaint Section, and the Bureau of Public Service of the Public Utilities Commission. This excessive number of relationships, both direct and indirect, makes it almost impossible for a Division Superintendent to efficiently perform his duties. The prevailing attitude of numerous employees interviewed was a desire to have "one boss."

Excessive Paper Work

Another factor which prevents a Division Superintendent from efficiently performing his duties is the excessive amount of paper work required. Each day he receives the copies of the individual inspectors' reports pertaining to his division. One of these reports, Form 702R, pertains to service and rule violations, detentions, disabled cars and other comments pertaining to personnel and service. The other report, Form 703R, lists the turnbacks made by the inspectors during the day. The information pertaining to detentions and disabled cars is compiled and in three Divisions is placed on Page 1 of a Division Superintendent's report, Form F706R. In two Divisions this information is placed on a "Daily Record of Mileage, Hours, etc. - Cars," Form 608. The information regarding turnbacks is compiled and handled in the same manner by the respective divisions. Only the original of Form 608 is prepared, and it is forwarded to the General Manager's office. An original and three copies of Form F706R are prepared in all Divisions. However, page 1 of this form is not used by two divisions, as the required information is prepared on Form 608. The distribution of Form F706R is as follows:

1 - Superintendent of Transportation
1 - Assistant Superintendent of Transportation
1 - Director, Bureau of Personnel and Safety
1 - File

The information from Form 608 is transmitted to the office of the Superintendent of Transportation from the General Manager's office and, in reverse, the information on Page 1 of Form F706R from three divisions is transmitted to the office of the General Manager from the office of the Superintendent of Transportation.

Accident Reports

All Divisions fill out and complete Page 2 of the Form F706R. The first section of this form pertains to accidents. Section 5, Rule 33 of the Municipal Railway official rule book, reads as follows:

> "A complete written report must be made of all accidents on or before the end of the run. No matter how trivial the accident seems to be, report it, as the trifling accidents sometimes give the most trouble through lack of information or witnesses to same."

The reports used by an employee reporting an accident are Form F3570 and BC3574B if personal injury or property damage occurred, and Form F3574 if the employee himself was injured. After an accident has been reported, the Dispatcher on duty writes a summary of each individual accident on a mimeographed form. The employee report forms are forwarded to the Claims Department. At the end of each day the hand-written form is typed, making an original and five copies and distributed as follows:

1 - Superintendent of Transportation
1 - Assistant Supt. of Transportation
1 - Director of Bureau of Personnel and Safety
1 - Chief Instructor
1 - Car House Foreman
1 - Inspector Instructor located at Division

The same accident summary is also typed on the second page of Form F706R. The policy in practice is that each employee reporting or involved in an accident will be interviewed by his respective Division Superintendent. As this interview usually takes place one or two days after the accident, the Division Superintendent is limited to merely interviewing the employee. Sometimes the employee will admit blame and sometimes from the accident report description it is apparent that the

employee is to blame. In these cases the Division Superintendent utilizes his own judgment as to the disciplinary action warranted, providing suspension is not involved.

There is no written policy in existence which provides for a direct line of communication between the Claims Department and the Division Superintendents. Often within a period of a day or two the Claims Department has sufficient information to determine chargeability or non-chargeability of an accident, but the practice is to hold this information and present it to the Accident Prevention Committee.

Disposition of Accident Cases

In most cases, unless it is apparent that the employee was at fault, the time spent by the Division Superintendent in interviewing the employee can hardly be justified.

Included on Form F706R, along with the accident summaries, is the disciplinary action taken by the Division Superintendent. A summary of the action taken by Division Superintendents during the month of February, 1949, in two divisions is listed below.

Total Number of Accidents Reported	172
Interviews of Employee Involved	82
Given further Instruction	8
Cautioned	33
Reprimanded	31
Warned	6
Suspended One Day	1
Suspended Two Days	1
Suspended Four Days	1
Suspended Five Days	3
Suspended 10 Days	1
Suspended 30 Days, with Recommendation for Dismissal	4
Terminated During Probationary Period	1

Another policy in existence is that each employee involved in an accident is followed up on the job by an Inspector Instructor assigned to the Training Department. A Division Superintendent has no control or supervision over this procedure, which is described in the writeup under the Training Department.

Disciplinary Records

A second section of Form F706R contains the summary of discipline handled by the respective Division Superintendents. Disciplinary action is taken by them based upon their own observations and evaluations, violations reported by Inspectors as listed on Form 702R, complaints against employees received either by telephone or letter from the public, and violations reported by Inspector Instructors. The only disciplinary policy which is written and entered in the Municipal Railway official rule book pertains to Oversleeps. Penalties range from two days suspension for the first Oversleep to dismissal for five Oversleeps.

It is extremely difficult to determine the actual disciplinary responsibility of the Division Superintendents other than pertaining to Oversleeps. One Division Superintendent stated that before suspending an employee he always received permission from the Superintendent of Transportation. Another stated that he had complete authority to suspend an employee up to and including five days. Another stated that he had the authority for all discipline, but he always cleared contemplated suspension with the Superintendent of Transportation before actually taking such action.

It is apparent that the disciplinary responsibility has not been delegated to the Division Superintendents or, if it has been delegated, the delegation has not been specific, clear-cut and fully understood by them.

After receiving the reports from the sources as listed above concerning violations of rules and regulations, the Division Superintendent interviews the employee in question and takes appropriate disciplinary action, with the limitations described above. The action taken is entered on the second page of Form F706R and on the employee's Division Personnel Card. In addition, a Superintendent's Discipline Report is prepared in duplicate, one copy for the division files and the other copy for the Superintendent of Transportation. In some divisions a third copy of this form is made and sent to the Director, Bureau of Personnel and Safety.

An example of the number of disciplinary cases handled by a Division Superintendent at one car house is as follows:

	Violations Reported By Inspectors	Public Complaints	Review of Accidents	Total
March 1, 1949	10	2	4	16
March 2	9	2	3	14
March 3	8	1	2	11
March 4	17	5	7	29
March 6	4	4	4	12
March 7	4	1	6	11
Total	52	15	26	93

This Division Superintendent averaged 15 personal interviews per day for the week in question. In addition, he is responsible for another division at an entirely different location.

Including the paper work previously discussed and allowing 15 minutes to investigate and interview each employee involved in a complaint, violation, or accident, it is apparent that the time spend by a Division Superintendent inspecting the facilities and services originating from his division is highly inadequate. He is bogged down in detail to the detriment of his paramount function.

IMPORTANCE OF SCHEDULE DEPARTMENT

The Schedule Department can financially make or break the operation depending upon the degree of efficiency with which it operates. It is here that the cost and quality of service is determined. To a large extent within the hands of the people in charge of the Schedule Department falls the responsibility of spending approximately $7,800,000 annually, of the revenue collected. Schedule making is a highly specialized field and should include the best qualified personnel available. This department should function in accordance with a carefully prepared mode of procedure, the details of which should be subjected to close scrutiny of top management.

The importance of selecting experienced and highly qualified manpower, and scientifically prepared procedure in the Schedule Bureau, cannot be over-emphasized. Its organization and functioning should not be left entirely to subordinate officers, but should come closely under the direct review of the General Manager.

Functions of the Schedule Department cannot be properly carried out unless it has a proper supporting organization both in the field and in the office, operating in unison and with closely coordinated teamwork, under close supervision of a highly competent leader. A continuous and accurate record of current and future events must

flow into the Schedule Department, providing at all times an indication of traffic flow and volume on all lines of the system and anticipated requirements for special events. Schedules in this business cannot remain static. In long-haul transportation, such as railroads and inter-state bus lines, schedules are prepared that very often remain in continuous effect for months and even years, without change. That condition cannot be tolerated on a high-density, frequent schedule, short-haul, mass transportation operation in a metropolitan area. There must be provision for daily revision in the operating schedules as required to take account of the fluctuating of the traffic volume from day to day and as between various hours of the individual days. The pattern of service must be continuously pared down to the absolute minimum and conversely, built up where the conditions may demand.

It would, of course, be a simple job for a schedule superintendent if after once his schedules are built, he could sit back and let them run indefinitely. In this industry, however, the job of the schedule superintendent is about the most confining and exacting position on the property, ranks among the highest as to responsibility, and requires an unusual type of personality peculiar to this specific field. A top-notch schedule superintendent is a rarity indeed and is of immeasurable value when found.

For the Schedule Department to be able to maintain a continuous and careful control of schedules it must be supplied with a complete and unrestricted flow of field information. This information should be produced primarily by a well-balanced and properly supervised group of field traffic checkers operating upon a systematic schedule, extending from line to line, with checks on each line of sufficient frequency to reflect immediately any permanent change in traffic characteristics or fluctuations of temporary nature. Traffic checkers should be carefully selected and properly trained. Effectiveness of the Department depends upon the accuracy of their work. Young men usually excell at this type of work. It is highly essential that the present Schedule Department be subjected to a complete and thorough revision both in organization, personnel and procedure.

The importance of schedule making and traffic control in urban passenger transportation operation is coming more to the front as time goes on and has been the subject of considerable discussion in trade magazines during recent months, indicating the concerted efforts of the industry toward effecting the maximum degree of economies to offset the adversities of decreasing net revenue.

In effect the function of the Schedule Department is to build the service machine by which operations are to be performed, fitting together the various gears of that machine and designing the ratios and inter-linking of its various parts. After it is designed it should appropriately be turned over to the Operating Department whose responsibility it should be to see that the machine runs properly in accordance with its basic design.

PRESENT SCHEDULE BUREAU

On this railway the schedule making function is delegated to the Schedule Department with a Supervisor of Schedules in charge. This organization consists of the following, which are not necessarily Civil Service titles, but rather internal office use titles:

1 - Supervisor of Schedules

1 - Chief Schedule Maker	3 - Typing and Filing Clerks
4 - Assistant Schedule Makers	1 - Chief Traffic Checker
2 - Statistical and Record Clerks	6 - Traffic Checkers
	1 - Secretary

By a notice issued to department heads on January 10, 1949, the work program of the organization was described as follows:

Supervisor of Schedules - General supervision, preparation of operating data for major changes and new lines, and field observations.

Chief Schedule Maker - Consults with operating department heads on schedule changes and revisions. Receives orders for schedule changes. Assigns and oversees work load for Schedule Department employees. Has charge of compiling and assembling necessary data for new or revised schedules, drafting and distributing of schedules, compiling, assembling and distributing Schedule Department statistical records and information, maintenance of files and records, general sign-ups, and general supervision in absence of Supervisor of Schedules.

Chief Traffic Checker - Consults with Supervisor of Schedules for Traffic or Time Checks. Receives orders for Traffic or Time Checks. Assigns and oversees work load for Traffic Checkers. Compiles data and graphs from Traffic and Time Checks. Maintains files and records on Traffic and Time Checks.

The traffic checking section was established in July, 1948. Prior to that time checks were made only at infrequent intervals when complaints became unusually heavy. Platform men and others without checking experience were used for the work.

During the past several months and at present much time of the department has been devoted to setting up schedules for the new routes and route changes in connection with the rehabilitation program. The added load of this program has been absorbed by the Schedule Department without increase in forces. Under normal conditions schedule making has been considerably below standard and it is easily understandable that under present abnormal conditions service would be at such a low ebb.

There appears to be no standard procedure by which the Schedule Department functions. The procedure is haphazard and no scientific methods of a systematic nature appear to be utilized. New schedules are based upon old ones with modifications, instead of upon traffic checks and time checks. No checks are taken to establish Saturday and Sunday schedules. Running time checks are seldom made. At one time a daily record of service delays was furnished to the Schedule Department, but the practice was discontinued.

Information received from the Schedule Department disclosed that traffic checks and load charts are about two years in arrears. None are available subsequent to those prepared for use in the DeLeuw, Cather study. It was stated that Sunday checks could not be made because of the overtime that would be paid to checkers.

Despite the fact that modern electric remote control headway recorders are used to maintain a positive record on a tape by electrically propelled pens, no use is made of the tapes by the Schedule Department. Daily Inspectors' reports are checked over and filed with apparently no use being made of them except in unusual cases. It is contended that time is not available for analyzing daily Unusual Delay records. In preparing schedules for new motor coach lines or trolley coach lines in replacement of street car lines, the street car running time is used as a base and vehicle requirements are computed on the basis of 1-4/5 coaches for each street car formerly operated.

The Schedule Supervisor is not acquainted with the number of daily turnbacks due to service delays despite the fact that they may be due to improper schedules. When interrogated as to the approximate number of daily turnbacks, an estimate was

made at 75; whereas the records show that the average is 365 daily.

In this department the same condition is evident that is found in numerous others. The functions seem to be conducted in a haphazard fashion without long-range planning and without adequate organization design, proper technical training, internal direction, and appropriate managerial control. This highly important department is deplorably deficient in meeting requirements for which it should be responsible. The vital nature of the office has been described heretofore. Many more modern methods are currently in use throughout the industry and could appropriately be applied to this system with very great benefits.

For purpose of illustrating the cut and try method of schedule making, one example will be cited as applying to the Fillmore Street line on which trolley coaches were substituted for motor coaches. Under motor coach operation an average schedule speed of 9.2 miles per hour was in effect, exclusive of layover. The line operated from Third Street to Broadway and Fillmore only, with 19 vehicles on the base service. When trolley coaches were installed, the line was extended a distance of about one mile to the Marina District, with 15 vehicles assigned to the base service and the schedule calling for 10.42 miles per hour northbound and 10.27 southbound.

Of the total trolley coach operators assigned to the new service, only one man had previously operated over the No. 22 line. With operators on a line with which they were not familiar, the schedule was set considerably faster than the previous motor coach schedule. It proved impossible to comply with the time specified and a new schedule was put into operation immediately. Proper advance study and careful schedule making would have avoided this situation which no doubt influenced public thinking against the new type of service. The same type of difficulty developed on the three Mission Street lines when motor coach service was established.

The vast majority of the schedules are set in such a manner that it is virtually impossible to maintain them especially at the busy periods. Vehicles bunch badly at the end of the lines consequently service to the public is highly inadequate. Daily average of switchbacks on the system is 365.2 and very few runs pull in at night without non-scheduled overtime.

During the week ending Friday, January 28, 1949, on the "L" line, the total non-scheduled overtime was 45 hours and 8 minutes, an average of 18.4 minutes per pull in, or an average 5-day week total of 11,734 hours annually, representing a cost of $52,242 for that line alone. This condition appears to cause no concern to the Schedule Department or other offices.

TRAFFIC SIGNAL CONTROL

Schedule making on this property is more difficult than found on some others due to the extreme traffic conditions in the downtown area and the non-rectangular street layout north of Market Street which is the principal traffic artery. Due to the very few streets crossing Market Street and the complexity of diagonal streets at points of intersection on the north side, an extremely difficult condition is created which would defy the most ideal Schedule Department to arrive at a wholly satisfactory solution.

One of the greatest steps forward in providing a smoother flow of transit in the downtown area would be the installation of modern three-light traffic control signals on Market Street. It is true that the cost would be high, but the benefit would be so great that the cost would amply be offset. It appears highly

inconsistent that thousands of dollars should be spent for extensive installation of new street lighting standards in the downtown area when the money could be utilized to much greater advantage to the public as a whole, if spent on traffic signals.

This idea is not new to this report. It has been recommended by others, but for such an important project, it is inconceivable that some means cannot be devised for getting action.

PARKING CONTROL

Another real problem confronting schedule making and transit service is the inadequacy of enforcement of no-parking and double parking restrictions. Many of the streets over which transit lines are routed are very narrow and improper parking of vehicles interferes radically with transit service. Instead of the City's contemplating entering the towing business because of the potential profit in hauling vehicles away from restricted zones, it should increase the penalty for violation to the extent necessary to eliminate the infractions completely. It is done in other cities and can be done here.

DISPATCHING

In this function there is also gross inconsistency as to the number of employees per unit of work load, the duties they perform and the employment classifications they carry. Each division appears to operate upon its own formula with little evidence of central control or planning. Live and capable management would not permit such conditions to develop. The fault does not fall entirely upon the Division Superintendents, but upon those higher officials who presumably carry the responsibility of coordination and delegation of authority. Without going into lengthy detail, the procedure will be described in general.

It should be borne in mind that the functions of dispatching are as important as those of schedule making and field supervision and even if both of the latter were ideal, a breakdown in dispatching would disrupt operations.

Under direct control and supervision of each Division Superintendent is a Dispatch Section. The Dispatch office is open twenty-four hours daily and seven days each week. The day shift is handled by a Day Dispatcher and each of the two following shifts by an Inspector, or by a Conductor or Motorman on special duty.

The duties of a Dispatcher are to dispatch street cars and buses from a division point according to schedule; assign operating personnel to relief, emergency and special runs; assign operating personnel to extra board; assign operating personnel to street collecting jobs and other approved special duties; assist operating personnel in completing accident reports; receive and check operating reports; and perform necessary clerical work as required.

There is no uniformity as to employee time schedule nor is there uniformity as to ratio of dispatch employees per number of operating personnel per division. The job titles of personnel performing like duties also varies. There are Conductors and Motormen performing full-time dispatching and clerical duties, and General Clerks performing dispatch duties.

The following tabulation shows the number of dispatching employees by classification at each division. It does not include relief assignments.

DISPATCH EMPLOYEES

Division	CLASSIFICATION S-120 Day Dispatcher	S-111 Inspector	S-102 Conductor	S-104 Motorman	B-222 General Clerk	Total
Geary	1	4				5
Potrero	1	2	1		1	5
Sutro	1	3				4
McAllister	1	4		3		8
Geneva-Ocean	1	7	4	2		14
Utah	1	1	4	1	1	8
Washington-Mason	1	1	1	1		4
Total	7	22	10	7	2	48

The ratio of full-time division dispatch employees to regular operating personnel and to pieces of rolling equipment is as follows:

Type of Equipment	Division	No. of Dispatchers	Ratio Dispatchers to Platform Men	Ratio Dispatchers to Vehicles
Street Cars	Geary	5	1 - 103	1 - 29
	Geneva	5	1 - 72	1 - 17
	Sutro	4	1 - 65	1 - 27
Trolley Coaches	Potrero	5	1 - 31	1 - 16
Buses	Utah	8	1 - 38	1 - 19
	McAllister	8	1 - 40	1 - 16
	Ocean	9	1 - 40	1 - 22.4
Cable Cars	Washington-Mason	4	1-17.6	1 - 5.4

The greater number of Dispatchers assigned to bus divisions as compared to street car divisions ostensibly is due to the greater work of computing mileage and reading of fare box registers. However, these same functions are performed at rail divisions by the dispatching force, without inflated personnel roster.

By effecting improvement in procedure, personnel presently required for register reading could be dispensed with. Under present procedure after a bus is turned in, an employee from the Dispatch office checks the register reading and places a new time card in the register box. The logical procedure would be for the driver turning in the bus to leave an extra card in the box with the closing reading entered upon it. The next driver taking the bus out would check the reading against the card and if found in order would pull out. If the reading on the card should not check with the register, the employee would request the garage foreman to initial the corrected reading before starting the run.

In general, the conditions presently existing could be largely corrected by:

1. Establishing a uniform employee time schedule for the various Dispatch offices.
2. Assign one S-120 Day Dispatcher to each day shift at each Dispatch office with classification designation changed to Dispatcher, eliminating the word "Day". Assign to each of the two succeeding shifts one employee with new classification of Assistant Dispatcher. Use selected platform personnel for relief. When the work requirements at any one dispatch office requires the full-time services of more than the personnel listed above, the job should be filled by a General Clerk, rather than by an S-111 Inspector or other out-of-line classification.

3. Establishing a training program for Dispatchers, to include uniform duties and responsibilities.

When the division sign-up is complete, the Dispatcher must make up file copies for ten different departments and a sign-up of extra men for days off must be handled. He is held responsible for making up the extra board list so that all men may earn approximately the same amount every two-week period. Daily a single copy of a daily manpower report is sent to the Superintendent of Transportation. Every week copies of a weekly manpower report are sent to the General Superintendent of Transportation, the Division Superintendent and the Training Department. He lists and files miscellaneous reports, leave requests, and such, during his turn of duty and completes the form of overtime for platform men over and above the time shown for their scheduled runs.

At street car divisions if a motorman fails to show for his run, the conductor is expected to notify the Dispatcher who then assigns an extra man. The extra man is allowed five minutes to copy the schedule and the run is kept open until the last minute; this usually means that the car leaves the barn from 5 to 10 minutes late.

At some divisions destination signs and route numbers are not kept in the offices but are thrown upon tables in the Gilly room, together with miscellaneous items of discarded coke bottles, old newspapers and paper cartons.

Run numbers, except at Washington and Mason, are hung on a board in the Gilly room or in the barn. Operators are frequently unable to find the required numbers. There has been no consistency in display of run numbers. However, shortly after inquiry was made as to the practice in use of run numbers, they began to appear on the cars. On March 15 nearly all cars operating out of Geneva Division carried run numbers. Crews, when questioned, stated that this was the first day they had been issued.

A systematic practice would be for operators to sign up before a Clerk who would issue to him his assigned run data on a paddle to be displayed in the coach, a defect card showing the number of the vehicle he is to take out and its location, together with his transfers and complete outfit. These should be kept in numbered pigeonholes by individual package prior to issue so that if a man should fail to show, the Clerk could readily and rapidly notify the Dispatcher and the complete outfit could be handed to an extra board man with practically no delay in pulling out.

On this property, after signing on, a motorman proceeds to the car house shop where a board is available on which is marked in chalk by the shopman the vehicle assigned to his run. This system has the disadvantage that the Dispatcher has no direct list of vehicles assigned to runs. Secondly, the actual allocation of vehicles is taken out of his hands, and, thirdly, the ever-present possibility of a crew reading the wrong number.

A system of vehicle assignment control commonly used elsewhere is to maintain a peg board in the Dispatcher's office whereon various positions of pegs on the board indicate the status of all vehicles. Thus every vehicle is recorded on the board indicating whether it is ready for assignment, held for spare, in bad order, in shop, or at other location. By this system, on receiving a request for vehicle change due to failure, the Dispatcher can rapidly make all necessary arrangements without consultation with the shopmen.

It is recommended that the package outfit system be adopted; that the Receiving Room be put under control of the Division Superintendent; that outfits be put up and issued by a Clerk responsible for seeing every man when he signs on so as to observe his appearance; that some form of vehicle control board be installed in the Dispatcher's office; and that equipment allocation be made the duty of the Dispatcher.

FIELD SUPERVISION

Another of the functional phases of the operation of equal importance to schedule making and proper managerial control is the Field Supervision. There is no other branch of the service that is so badly in need of remodeling. It is this function that is charged with the responsibility of keeping service up to standard on a day to day basis throughout all hours. Efficiency of accomplishment in field supervision is directly related to the adequacy and efficiency of schedule making and vice versa.

Supervisors are continuously in the field from day to day directing the activities of individual operators on the various lines. They should be sufficiently close to the operators to obtain information from them as to traffic volume, shifting of loads, and unusual conditions. This information should be passed daily into the Schedule Department by the field supervisors. One point of great importance is that when such information is submitted to the Schedule Department, immediate action be taken. If such is not done, in addition to losing the financial benefits that might be possible, the field supervisory force very quickly assumes the attitude that their efforts are wasted and their talents are not appreciated. As a result they will invariably lose interest and fail to turn in proper and complete information. For any man to take pride in his job he must be assured that his efforts are appreciated.

The effectiveness of a well-organized and properly functioning Schedule Department can be easily offset by an improperly conducted organization of field supervision. Even though the average operator is inclined to be conscientious about his work and desirous of carrying out his responsibility, success cannot be attained by relying solely upon his honesty and judgment in a transportation operation. In the field, careful coordination between all individuals and schedules must be maintained and in order to do so, a properly established chain of authority must be recognized and carried into action. The Schedule Department, so to speak, builds the schedule machine and it is up to the Operating Department to see that the machine is properly kept in motion. To keep the machine in motion according to the intent of its design there must be a qualified supervisory organization, each member of which is fully acquainted with the extent of his authority and the magnitude of the responsibility he carries. Without proper supervision the most perfect schedules will fail to realize the maximum revenue at minimum cost.

Field supervisors, of course, must fit into a specified level of the chain of command, passing on the orders of their superiors to their subordinates and in turn, receive the full support of the topside. If there is weakness in the next level of command above the supervisors, it is reflected by weakness in the supervisory staff. The consequent lack of discipline will become apparent in the conduct of operators and be reflected in public reaction.

On this property field supervisors are, for most part, operators that have been promoted and are still affiliated with the unions to which they previously belonged. This situation in itself reacts against the best interests of service.

Whereas the usual designation of this class of employee is Supervisor, in the Municipal Railway the term "Inspector" is used and to a large extent, much abused.

At the present time there are 120 Inspectors on the payroll of the railway. To fill this position the Civil Service Commission gives a promotional examination. The employees eligible to participate in the promotional examination are Conductors and Motormen. The duties of the position as stated in the approved job description include line supervision, instruction, and dispatching. This grouping of duties within one position classification not only reduces the number of entrance and promotional examinations which the Commission is required to administer, but it allows the management of the railway a certain degree of flexibility in making assignments or selecting personnel. This situation will be even more important to management, if additional credit for service rating is counted in the overall promotion test grade. To remove the existing current confusion in connection with the terminology and usage of the classification "Inspector", it is recommended that the present position of S-111 Inspector be sub-divided to include the use of payroll titles as Supervisor, Instructor and Dispatcher. Each employee's title should be indicative of the type of work performed.

A study of the personnel holding the position of S-111 Inspector indicates several incidents of individuals working out of classification. In addition, several situations exist where a special assignment of an Inspector is made, in which assignment he reports to and receives orders from a department head—thus further complicating the organization structure.

There are 120 Inspectors on the payroll assigned to various duties as follows:

Assignment	Number Working
General Manager	1
Transportation Department	
General Supt. of Transportation	2
Central Control:	
Radio	2
Information Desk	2
Line Inspection	60
Schedule Department	5
Division Dispatch Sections	20
Accounting Dept. - Revenue Section	
Car House Receiving	4
Bureau, Personnel and Safety	
Accident Prevention	3
Training	19
Sick Leave Section	2
Total	120

It is obvious that this classification is radically in need of review and action that will place the various employees under a class designation that indicates the nature of their jobs. The title of Inspector should carry a distinct duty definition and only one. The position of Inspector is an important one and those persons properly entitled to the title should enjoy the distinction that goes with the ability to earn it. The confused status of this classification is another indication of the red tape and lack of central executive control that goes with the present system of administration.

A review of the organization chart indicates that the Chief Inspector should receive orders from and report to the General Superintendent of Transportation but

in practice the line of authority between these two positions is limited to an occasional exchange of information pertaining to service complaints. The actual direction and control over this section is exercised by the Superintendent of Transportation who receives daily Inspector's reports and Central Control logs, and approves or disapproves any disciplinary action requested by the Chief Inspector. From time to time the Chief Inspector receives direct orders from the General Manager and on occasions, from the Manager of Utilities.

The Chief Inspector is responsible for general supervision and policing over all lines of the system. Under his jurisdiction is an office section including Radio Control and Information. The clerical work is performed by one Conductor. Two employees are assigned to Radio Control daily, one for each shift, and likewise two employees are assigned to Information duty. In addition to handling the information calls, the personnel assigned to this unit also observe the headway recorders.

Inspectors assigned to the inspector districts and radio car districts primarily are concerned with the schedule flow of service. They have authority to order switchbacks or make temporary schedule changes as the service demands and generally have authority to remove a platform employee from service for insubordination, drinking on the job, or for flagrant violation of safety rules. On all other violations, the authority is limited to instruction.

For each change in service and for each violation noted, the Inspector prepares an Inspector's Report. One copy of the report is sent directly to the appropriate Division Superintendent and the second copy, after review by the Chief Inspector, is forwarded to the Superintendent of Transportation for filing.

Disciplinary action of platform employees is supposed to be the initial responsibility of the Division Superintendent. Inspectors do not report minor infractions of the rules and regulations but follow the policy of calling such infractions to the attention of the employee involved and making the necessary instruction. They do, however, report repeated minor violations.

Disciplinary action on such reports is the responsibility of: (1) Division Superintendents; (2) Superintendent of Transportation; and (3) The General Manager. The general feeling of the Inspectors is that the laxity of operating personnel is due to the disciplinary policy of reprimand, warn, reprimand, warn. The attitude of some of the Division Superintendents is that if the Inspectors did an on-the-spot correction for all offenses, there would be no need for such an abundance of daily reports which are time-consuming and largely ineffective. Some Division Superintendents accept the reports of some Inspectors with recognition, but take small heed of reports of others. In other words, the Division Superintendent feels that he knows which Inspectors are properly doing their jobs and consequently discounts the reports of the others. The situation provides for the typical game of "buck passing" with the end result that proper discipline suffers.

There is no organized training program in existence for the Inspectors. All training is carried on individually by the Chief Inspector and Senior Inspector. There is no Inspectors' instruction or duty manual available. In the miscellaneous category, but indicative of improper line of command, the Chief Inspector notifies the General Manager whenever any employee of his section goes on the sick list and again notifies him when the employee reports back to duty. In addition, the Chief Inspector notifies and justifies to the Director, Bureau of Personnel and Safety by formal letter whenever platform employees are used temporarily as Inspectors.

Lines are supervised by Inspectors, but not all of the Inspectors are concerned with line supervision, the designation "Inspector" being used more as a salary classification. This gives rise to some confusion as to how many supervisors are concerned with the actual operation of the transit system.

Line Inspectors are directly responsible to the Chief Inspector, who has under his control the Central Radio Control Room located at the Geary Division. The Central Control Room is equipped with a two-way radio station KCRJ, with main transmitting tower on top of Twin Peaks. By this means communication is maintained with the various radio cars throughout the City. The Control Room is also equipped with a police radio receiver which enables the radio dispatcher to hear calls to fires, wrecks, and other unusual incidents which may cause disruption of transit service.

All telephone calls to the railway for information regarding service are passed to the Central Control Room. The Inspector who handles these calls is also responsible for observing the headway recorders and making up a log reporting on the previous day.

The Control Room is staffed from 6 a.m. until 1 a.m. At this time the radio is shut down and the Night Supervisor travels the City by automobile maintaining frequent contact with the telephone switchboard at Geary Division.

The Chief Inspector is assisted by a Senior Inspector whose normal tour of duty ends at midnight. He acts as relief on days when the Chief is off duty. A third Inspector acts as relief man in the Central Control Room four days per week and for the remainder of the time he is available for field work.

Short-wave radio communication is maintained between Central Control and 9 automobiles, 3 wreckers, and 7 line trucks, all radio equipped. The remainder of the 29 radio equipped vehicles are alloted to the various officers of the Railway.

In the Central Control Room is located a large wall map showing the location of the street car and trolley coach lines, but not of the bus lines. The map is not up to date. For the purpose intended, this map should be kept current at all times. In the office of the Chief Inspector, located adjacent to the Control Room, files of all control record accidents and personnel records of Inspectors are maintained.

There are at present 64 Inspectors and three acting Inspectors under direct supervision of the Chief. Inspectors' duty stations are located at points throughout the system arranged as far as possible so as to have control of several lines. Telephones are located at most stations to provide direct communication with headquarters.

In addition to station Inspectors, there are about eight Inspectors on duty with radio cars. No provision is made for regular relief in case of sickness so that when a station Inspector is away from duty, it is usually necessary to ground a radio car to cover his position. According to a letter dated September 29, 1948, from the General Manager to the Chief Inspector, in the event of sickness the Chief Inspector should call upon the Bureau of Safety and Accident Prevention for the loan of one or more of the Inspectors from that department. As far as can be ascertained whenever such application has been made, it has been refused. In particular, upon the motorization of the lines on Mission Street on January 17, the General Manager authorized employment of three extra Inspectors temporarily and application was made to the Bureau of Safety and Accident Prevention for the loan of three men. The request was refused with strong emphasis, whereupon the Chief Inspector, the Assistant Superintendent and the Superintendent went directly to the General Manager,

by-passing the General Superintendent. The outcome was that three platform men were temporarily assigned as Inspectors.

Observation indicates that radio Inspectors are prompt in answering calls, answer emergency calls with dispatch, and utilize the radio system effectively. Placement of line Inspectors is such that frequently their activities are interfered with by traffic and they can do no more than act as recorders. Action taken on Inspectors' reports is not adequate. Inspectors frequently make reports of violations of rules, incorrect destination signs, running ahead of time, and other infractions and, except by hearsay, they never know what action has been taken. Further, many of the Inspectors are of the opinion, and it must be based upon experience, that should a situation arise where they would be justified in removing a man from his vehicle, unless the man was very definitely intoxicated, the Inspector would get into serious trouble for his action.

The work of Inspectors is rendered difficult by failure of many vehicles, particularly street cars, to display run numbers. None are available at Geary Division and incomplete sets were found at the Geneva Division. At one time all cars were equipped with run numbers, but the practice has fallen into disuse. This feature is of sufficient importance to justify some measure of managerial attention. The attitude displayed appears to be utter indifference.

One serious source of difficulty is the conflicting instructions given to operators on the line by numerous Inspectors assigned to the several other offices than that of the Chief Inspector. This applies particularly to those assigned to the Bureau of Personnel and Safety which participates in operational functions but does so independently of the General Manager of the Railway. Proper morale and supervision cannot be attained under this mispractice.

ELECTRIC HEADWAY RECORDERS

The principle of operation of the headway recorders is that the trolley of a street car or trolley coach makes contact when passing under a pan on the overhead wire. This contact causes a pen corresponding to this position to make a mark upon a chart which is driven electrically by a clock-type mechanism. The chart is divided into 24 hours and each hour into 60 minutes. The pens are operated by electro-magnets.

At present the location of the contacts is far from ideal and the recorder charts and the information gathered therefrom is not made full use of. The system employed at present is that during the day, should a gap appear upon a line of more than 15 elapsed minutes since the last time the pan at any one location was hit by a trolley, a report is made of this on the Central Control Unusual Delay Record, and the nearest radio car is sent to investigate unless, as sometimes happens, there is none available. At night, gaps are neither reported nor investigated unless they are more than 15 minutes or more than double the line headway, whichever of these two is the greater. The effect of a gap of 15 minutes upon a $2\frac{1}{2}$ minute headway can readily be imagined. However, from the existing method of report and proper use of the charts, very useful information could be deduced, but unfortunately the information, which is carefully made up by Central Control, is filed without analysis by the Schedule Department.

Material improvement could be effected in the procedure and arrangement of the Central Radio Control. Some form of indicating device should be installed to provide visual indication of radio car availability. A form of peg or light board could be devised. If the headway recorders were grouped upon either side of the

Central Radio Dispatcher with the radio in the center, one man could keep a close watch upon the system far more effectively than is done at present, especially if inquiries from the public are directed to the proper Information Bureau.

Schedules in operation today are such that gaps and wide divergences from schedule are unavoidable. However, with proper schedules in operation, the Central Radio Dispatcher should be able to maintain effective control without assistance. The log should contain only important information such as normal switchbacks, divergences from schedule, disabled equipment, and other unusual occurrences. With the present method of scheduling, the number of switchbacks is so great that it would be impossible to record them all in the log. Information derived from the headway charts and properly recorded should be invaluable to the Schedule Department if used.

Much of the headway recorder equipment at present is not in use. However, with the contemplated extension of trolley coaches, it will shortly be in use again. The location of headway recorder pans downtown at points where many lines are running together and also where Supervisors are stationed, is inadvisable. Contacts are made so frequently that it is impossible to identify individual vehicles for headway control.

SPECIAL AGENTS

The Municipal Railway has a contract with a well-known detective agency which may be cancelled by either party upon 30 days advance notification. The agency supplies undercover checking throughout the system and the Railway is billed monthly at the rate of $1.25 per hour for personal services plus expenses involved in making the investigations.

For the fiscal year 1948-49 the Railway requested $25,000 for this function. The amount was reduced by the Mayor to $17,700. For the year 1949-50 the Railway has requested $27,954. Allotting 25 percent of this amount for expenses and 75 per cent for personal services, the latter would amount to approximately $21,000. At the rate of $1.25 per hour this amounts to 16,800 hours of special field investigation, or on the basis of a 7-hour day, 2,400 man days. This would be equivalent to nine men working 5 days a week for 261 days per year. However, to give the proper coverage the work schedule should extend to the night operations and also Saturdays, Sundays and holidays. Such a schedule could be established as follows:

Man No.	Days	Hours
1	Monday through Friday	5:30 A.M. to 12:30 P.M.
2	" " "	7:00 A.M. to 2:00 P.M.
3	" " "	2:00 P.M. to 9:00 P.M.
4	" " "	4:00 P.M. to 11:00 P.M.
5	Tuesday " Saturday	6:00 A.M. to 1:00 P.M.
6	" " "	1:00 P.M. to 8:00 P.M.
7	Wednesday " Sunday	6:00 A.M. to 1:00 P.M.
8	" " "	1:00 P.M. to 8:00 P.M.
9	Special Assignments	

At the present time the responsibility for coordinating the agency's activities rests with the Superintendent of Transportation. In actual practice the Chief Clerk in his office handles this liaison. Requests are made to the agency to either ride a certain line for a specified length of time or to check on a designated employee. Much of the agency's time is spent checking cable car conductors and ground loaders for proper registering of fares. Other violations reported and requiring investigation pertain to discourteous treatment, improper operation of vehicles, and other

general operating conditions.

Practically full time of Line Inspectors is devoted to checking schedule operations, time points, and making turnbacks, rendering it almost impossible for them to properly check operators for compliance with all of the many rules and regulations. Very seldom does an Inspector ride a line in regular line of duty and when he does he is immediately recognized with consequent concentration upon strict adherence to rules and regulations during his presence. The Inspector Instructors follow up on operators for instruction purposes and it is good policy not to use their reports as a basis for disciplinary action. The only time the Inspector Instructor reports should be used for disciplinary action is when the operator fails to cooperate with the Instructor or continues to make the same violations or mistakes.

During the month of January, 1949, the Railway received from the public, through the complaint section by telephone, 154 complaints relative to alleged violations by operators. This does not include complaints received by letter or those relayed directly to the appropriate division on Saturday afternoon and Sunday when the complaint section is closed. During this same month the agency billed the Railway $2,666.89 for private investigative work.

Due to the great number of operating rules and regulations covered in the official rule book plus the general bulletins issued from time to time to cover new or emphasize old regulations, a thorough training of those special investigators who are charged with checking for violation is absolutely necessary. If the Railway is to obtain a return on its investment in private investigations in terms of better service and fewer violations by operators, it is essential that the personnel utilized by the agency pass a prescribed training course.

STREET COLLECTORS

On this property there is an unusually large number of street collectors, or ground loaders as they are sometimes called. This class of employee was brought into being generally through advent of the motor and trolley coach in replacement of street cars and also with introduction of one-man street cars as a means of speeding up fare collections at heavy points of passenger loading so as to relieve the operators of fare collection during peak traffic periods.

Most transit properties have reduced the proportion of ground loaders by careful training of operating personnel and strict insistence upon proper schedule making. The saving in time on the average is not great by use of loaders and if enough vehicles are assigned to all runs to accommodate the traffic, without unreasonably high loading factors, the flow is relatively even and the benefit of loaders is not great in proportion.

Excessive use of ground loaders is one means of attempting to cover up the effects of deficiency in service and equipment assignments and correspondingly reduce complaints.

Use of ground loaders at exceptionally heavy concentration points is a beneficial practice, but unnecessary use of them is not only wasteful of payroll dollars, but also creates a real avenue of revenue leakage.

Most properties abhor any method of fare collection that does not permit fares to go through a fare box. This is no reflection upon the rank and file of personnel, but the practice of filching in transit is as old as the industry itself and it is recognized by operators that if a loophole is left open and dishonest employees take

advantage of it, the blame is not all on the employee. The general practice, therefore, is to reduce money handling to the very lowest minimum.

As of April 14 there were 140 collector locations as compared with 132 in August of 1948. It is estimated that the annual cost of collectors, based on present assignments, is about $187,000. Under proper conditions of scheduling, equipment and supervision, this figure could be reduced by at least 75 per cent, or approximately $150,000.

Assignment of ground loader stations should be done on the basis of their value in the reduction of cost of operation and the advantage to the public in the way of expedited service. These two tests should, however, be rigidly made and continuous follow-up exercised to determine the continuing need for such service at each location.

On this system there is a considerable excess of ground loaders based both upon field observation and analysis of turn-ins of individual collectors. There appears to be no system of close check on this class of personnel as to their continuing need. For comparison, on Key System Transit Lines' operations in the East Bay Area the use of ground loaders has been completely discontinued in the local transit service. On Municipal Railway the assignment of collectors is one of the most loosely conducted procedures in the Operating Department. Requests are made for individual assignments by any one of seven different offices, including the General Superintendent of Transportation, Superintendent of Transportation, Assistant Superintendent of Transportation, Chief Inspector, Senior Inspector, Line Inspectors and Instructor Inspectors. The first three officers listed are authorized to establish a collector location directly by telephone from personal observation in the field. If the job is a full-time assignment, the information is forwarded to the Schedule Department.

Employees sign up for collector jobs only if they are full-time. All other collector jobs of less than six hours and forty-five minute durations are assigned by the various division dispatchers. Such jobs are detailed from the extra board or combined with trippers.

When the need for a collector is determined by any of the Line Inspectors or Instructor Inspectors, the information is usually relayed through the Chief Inspector or the Chief Instructor to the appropriate Division Superintendent. The latter, after making an observation of the situation, will obtain approval from either the General Superintendent of Transportation or the Superintendent of Transportation. The follow-up of the collector locations to determine continuing need is the responsibility of the Transportation Department, but the responsibility for establishing or discontinuing collector locations has not been assigned to any one office or employee of the present organization. There is no evidence that any form of scientific measure or standard is used as a basis for determining collector locations or for their discontinuance. The Schedule Department has no function in recommending the need or abolishment of these locations, yet this section is staffed with Traffic Checkers and makes the schedules.

There are no readily available cost figures to show the cost of the personnel used at the present 140 locations. The revenue section of the Accounting Department prepares daily figures of cash fares and transfers at the various locations in order that the amounts can be credited to the particular lines in operation. No apparent serious consideration is given to the cost involved. This process appears to be just another one of the easy ways out of a difficult service problem that should be corrected by other means.

For March 4, 1949, the daily accounting record of turn-ins showed street collectors to have taken in 24,505 cash fares, 306 tokens and 16,859 transfers at 124 locations, or on the average, 336 collections per location. As indicated above, as of April 14, 1949, the number of locations had been increased to 140. This increase and the previous numbers of locations were established without applying any sort of measurement or fumula other than casual observation.

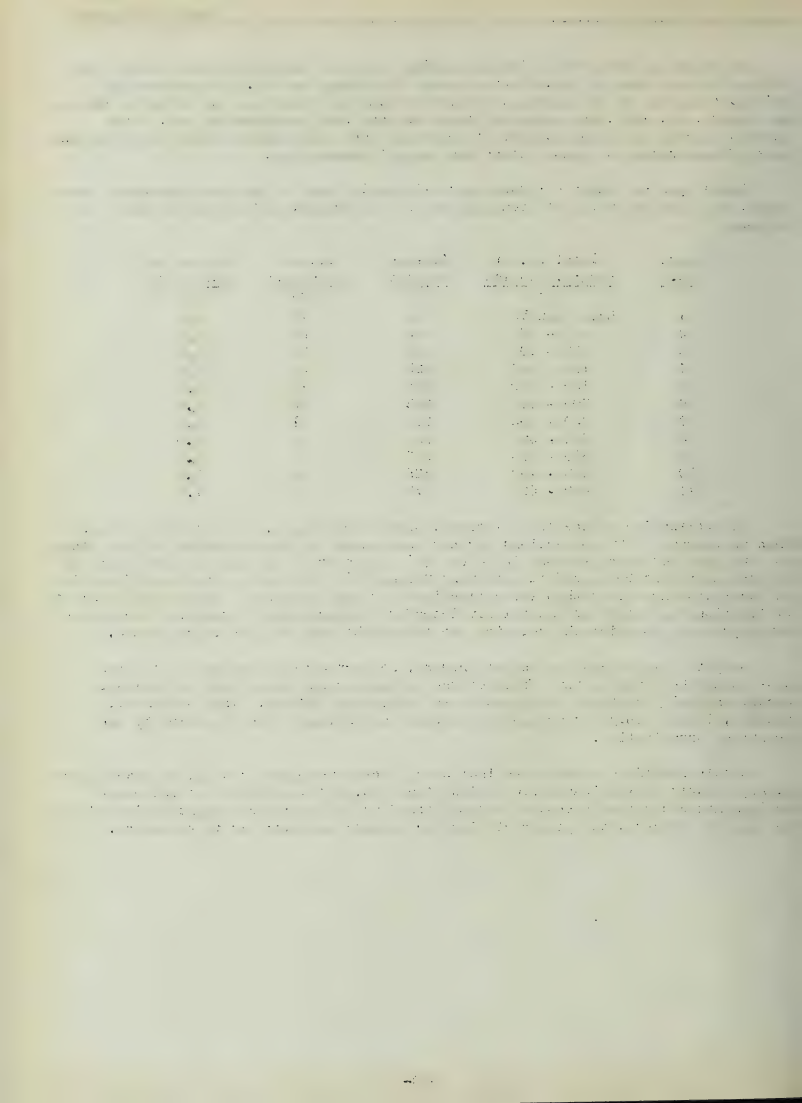
Based upon the March 4 figures and eliminating some of the less important locations, the classification of locations by various brackets of collection shows as follows:

Group No.	Total No. of Pasgrs. Handled (1)	Average Handled (2)	No. of Locations (3)	Equivalent Bus Loads (4)
1	Less than 50	45	17	0.7
2	50 - 75	63	24	1.0
3	75 - 100	88	22	1.4
4	100 - 150	125	34	1.9
5	150 - 200	175	11	2.7
6	200 - 250	225	3	3.5
7	250 - 300	275	1	4.2
8	300 - 350	325	1	5.0
9	350 - 400	375	1	5.8
10	400 - 450	425	-	6.5
11	450 - 500	475	1	7.3

In explanation of the above figures, under Group No. 1, at 17 locations less than an average of 50 collections per hour were made, or the equivalent of less than one bus load per hour as shown in Column (4). An average bus load in peak hours of 65 passengers has been used in computing Column (4). Collectors cannot be justified at locations where less than 150 collections per hour are made. This would eliminate 97 locations and would not materially interfere with service. Actually, the public would probably not miss the deletions so far as the good they do is concerned.

Despite pointed and persistent inquiry, no such analysis as that set forth above could be found in any office of the Railway or any other type of analysis except the daily statement prepared by the accounting office. That statement, however, is used only for accounting purposes and given no consideration by the operating organization.

A rule should be established that no collector assignments should be made where average hourly collections would be less than 150, and the control of collector assignments and removals should be established as the specific responsibility of designated offices with appropriate instruction and standards as to procedure.



CHAPTER IX

MAINTENANCE AND REPAIR OF EQUIPMENT AND FACILITIES

Maintenance of the facilities used in providing passenger service is one of the highly important functions of the transit business. Under most efficient operating procedure and scheduling, service can not be held at proper standard unless the facilities used in providing service are kept in good condition and properly serviced.

Due to the specialized character of this branch of the business continuous control of highly qualified nature over all phases of the technical processes involved must be exercised or costs will be excessive and quality of workmanship allowed to fall below safe standards.

Of total operating expenses exclusive of depreciation, taxes and accident costs, this function is responsible for about eleven percent representing for the year 1948, about $2,000,000. This cost is the aggregate of a multiplicity of items, functions and processes which unless closely controlled and coordinated can easily convert a system profit into a deficit. To avoid this, it is particularly important that most rigid scientific control be exercised in all phases and systematic procedure be invoked at all locations on a basis of standardized practice and complete enforcement. In this analysis much attention has been devoted to the maintenance factors and in many respects it has been found to be far below par. This condition is due to a number of causes, the underlying deficiencies being in organization, chain of command, division of authority and remote control of planning and design of facilities and procedures.

POLICY AND MANAGEMENT

The presently effective organization chart shows the Equipment and Overhead Lines Department as in charge of a general Superintendent who reports directly to the General Manager. Reporting to the general Superintendent is a Superintendent of Equipment under whose authority fall the Superintendent of Motive Power, Superintendent of Garages, Superintendent of Cable Machinery and Superintendent of Overhead Lines.

Although the chart does not so indicate, much of the planning and design in connection with this branch is directed by the Utilities Engineering Bureau and actually is developed independent of the General Manager of the Railway and without participation by the men who are directly in charge of the functional phases concerned.

The present organization of the equipment and Overhead Lines Department is shown on Chart V of the Appendix.

The General Superintendent on verbal orders of the General Manager was assigned as liaison officer between the Bureau of Engineering, Public Utilities Commission and the Department of Equipment and Overhead Lines. This assignment has developed into full-time duties and responsibilities, thus, in theory, leaving the department without a head. In practice, however, the Superintendent of Equipment and Overhead Lines continues to exercise just enough supervision and control to confuse the organizational thinking of the departmental employees.

The organization chart pertaining to these two positions follows accepted principles, but in practice the present arrangement creates a situation which is not only confusing to Superintendent of Equipment as to his duties and responsibilities, but also confuses the subordinates in the department as to who actually supervises them.

The Superintendent of Equipment has the following subordinates reporting directly to him who supervise a total of 684 employees.

1. Superintendent of Motive Power
2. Superintendent of Garages
3. Superintendent of Cable Machinery
4. Superintendent of Overhead Lines
5. Geary Car House Foreman
6. Geneva Car House Foreman
7. Sutro Car House Foreman
8. Potrero Car House Foreman
9. Washington and Mason Car House Foreman
10. Turk and Fillmore (salvage) Car House Foreman
11. Machine Shop Foreman
12. Car Building Foreman
13. Electrical Repair Shop Foreman
14. Overhaul Shop Foreman
15. Paint Shop Foreman
16. Special Machinery Foreman
17. Fare Box Shop, Employee in Charge
18. Pattern Shop, Employee in Charge
19. Miscellaneous Shop Group, Employee in Charge
20. Emergency Crew (Embarcadero). Employee in Charge

These twenty subordinates are located at eleven different places throughout the city. To adequately supervise this number of employees so widely dispersed is impossible. The present arrangement causes confusion, lack of adequate supervision, delay, buck passing and impairs the efficiency and economy of the maintenance and repair operations as a whole. The physical location of units within the department creates additional management problems as does the necessity for twenty-four hour continuous operation. These two factors, however, are even further justification for applying sound principles of management and supervision. With few exceptions, the work carried on by the various groups is not uniform and the problems that continually arise are many and varied.

Groups 1 to 10 above are at widely different locations about the City and all but Geneva Car House are several miles from the office of the Superintendent of Equipment. Groups 11 to 20 are housed in the Elkton Shops which cover several acres.

In addition to the actual supervision and direction of the work carried on by this office, there are a multiplicity of other duties that inherently require a large portion of this offices time. Some of these are conferring with the Railway system's offices in other departments to coordinate the integrated duties and functions; conferring with equipment manufacturers' engineers and representatives on equipment and material problems at hand or new developments; labor relations; changes in regulations both within the system and by regulatory bodies that may affect either his personnel or the equipment that he supervises.

It is physically impossible for one individual to properly supervise and direct such a large number of widely spread groups in work of this character.

SCHEDULE OF PREVENTATIVE MAINTENANCE SERVICE AND STORAGE

The following shows the Average Miles Per Turn-In (failure), exclusive of accidents and Transportation Department turn-ins not involving mechanical trouble upon maintenance crew inspections.

	Actual Miles Per Failure	Should Average Over
Street Cars	3,330	20,000
Trolley Coaches	3,290	10,000
Motor Coaches	827	3,500

The above actual average miles represent six months for Street Cars and five months for Trolley and Motor Coaches. The performance of each class of vehicle is far below the averages obtained by transit operators in cities of similar size to San Francisco. Street car miles per failure under the above definition should be not less than 20,000 miles. Some operators have averaged 45,000 miles. Both the Trolley Coach and Motor Coach miles per failure should be greater as indicated. The grades are unusually steep and the track and street surfaces are abnormally rough in San Francisco, which places additional strain on the equipment, but the severity of these conditions is not relatively great enough to cause the poor performance now obtained.

The primary causes of poor performances are poor maintenance facilities and shop equipment, and an inadequate preventive maintenance program.

To obtain good equipment performance, it is necessary to have in effect a properly planned and closely supervised servicing, inspection, and maintenance program. This includes a prescribed routine, with proper forms for making records of the work done and the equipment performances so that comprehensive, regular reports may be made for the guidance of the supervisory force. At present the street car maintenance program provides for -

1. Daily Inspections: Includes a pit inspection of brakes and inspection of door operation and lights.

2. 200 Hour Inspection: Considered 2,000 miles - For older types of cars.

3. 300 Hour Inspection: Considered 3,000 miles - For PCC type cars.

These latter inspections include light repairs and adjustments and require an average of approximately 8 man hours for the older cars and 20 man hours on the PCC cars. There are no written instructions or standards enumerating the items which must be inspected, such as the wear limits, allowable clearances, tolerances and adjustments. Uniformity and thoroughness of inspection work does not exist.

Mileage performed by the cars is a rough computation of merely multiplying the car hours by 10. This is a very inaccurate manner of computing car miles as it includes the time of pull-outs, relief allowances, and layovers.

OVERHAUL

At present there is no regular overhaul program in effect on any class of rolling stock. The overhaul program was necessarily suspended during the war years on account of shortages of spare equipment, manpower and material. It has never been resumed.

Although the fiscal report of 1947-48 stated that 81 car bodies had been overhauled and painted during the year the actual work done did not usually include the trucks, motors, control, and air brake equipment. It covered repairs to the car

body, sash and doors. Trucks, electric equipment and air equipment were frequently not removed from the cars before painting.

INSPECTION

Maintenance procedure for the future is to follow essentially the present method wherein body overhaul and painting will be conducted separately from overhaul of other equipment of the car. The same is true of the trolley and motor coaches.

The present Trolley Coach inspection routine and lack of prescribed standards parallels that of the Street Cars, except that in addition a "Unit" record system has been started for the follow units:

Rear End Axles	Brakes
Compressors	Control Springs
Motors	Batteries

It is intended to establish an overhaul period for these units on a mileage basis. At the present time no inspection cards are used.

The present motor coach maintenance program provides a Daily Safety Inspection, a 2,000 mile, and a 4,000 mile inspection. Very good inspection card forms are now used for these latter inspections. The data from the cards is summarized in the office of the Superintendent of Garages under classified headings, by various classes of equipment, and if properly used will be a helpful guide to the Supervisory Department as a means of improving equipment performance by improving the inspection adjustments and replacements before failures occur. A "Unit" record card is kept for certain units including engines, transmissions and differentials. However, this system is used only for recording the work done on the units at time of repair and is not used to establish overhaul periods which thereby reduces its value.

FUEL MILEAGE

Miles per gallon of fuel for the fleet of coaches is exceedingly low. For the year 1948 gasoline coaches averaged 2.40 and the Diesel coaches 3.09 per gallon. One reason for this low mileage is the large number of steep grades encountered in San Francisco that are not found on most other properties. However, it is estimated that fuel economy may be improved from 5% to 10% by improved tune-up equipment and methods.

RECOMMENDED MAINTENANCE PROCEDURE

To insure safety standard procedure and good equipment performance, written regulations should be compiled and issued for each class of rolling stock. These should clearly set forth the duties and responsibilities of the various personnel classifications within the organization; include all of the general rules pertaining to safety, personnel regulations, use of forms, fire prevention, and the handling of tools and equipment; specify inspection periods; define standards of servicing and inspection.

For street cars and other rolling stock where manufacturers' service and maintenance manuals are not available, all standards of wear limits, critical tolerances, overload line breaker settings, fuse capacities, air governor and relay settings, piston travel and trolley pole tension should be included.

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For motor coaches, certain detail as covered in the manufacturers' service and maintenance manuals might be excluded from the Railway System's manual. However, clear references to manufacturers' manuals under the various equipment headings should be made in lieu thereof.

Inspection periods of the street cars and trolley coaches should be thoroughly studied and proper periods established. There should be at least two classes of inspection in addition to the "Daily Safety Inspection." The "A" or first inspection should include only those items that experience indicates might need attention after the vehicle has performed the specified miles, and the "B" or second inspection should include all of the "A" inspection plus certain additions that experience indicates might need attention.

The present motor coach inspection periods of 2,000 and 3,000 miles may be best suited for the particular class of vehicle now operated. However, in addition to those inspections, mileages should be established for the individual units including starters, generators, fuel pumps and transmissions, to be overhauled so that such units will not be allowed to run to the failure point.

An overhaul period should be established for all classes of passenger vehicles, at which time the vehicle is repainted inside and out. A complete periodic overhaul of a vehicle should result in its being placed in a first class overall operating condition. This is desirable for several reasons. First, the concentration of major repairs into an overhaul minimizes the time the vehicle is kept out of service for repairs. Second, it permits the concentration of personnel, shop facilities and materials at a central point, thus reducing investment in facilities and materials and permitting the best usage of supervision and specialization of the working personnel. Third, it permits uniform work loading on this personnel, thus insuring the best productivity. Fourth, it improves the appearance and performance of the vehicle, which results in public approval.

Certain parts of the vehicle deteriorate with age, on a time basis, whereas other parts deteriorate with usage, and still other parts are a combination of the two. It is therefore necessary to establish the overhaul period of each type of vehicle by selecting the most strategic combination. For street cars this is about every three years or 120,000 miles of operation. For trolley and motor coaches - about every 2-1/2 years or 100,000 miles of operation.

The operating schedules should show the miles of every car and coach run and these actual mileages should be used for inspection and maintenance purposes instead of a computed mileage of vehicle hours multiplied by 10, as is the present practice.

HOUSEKEEPING OF MAINTENANCE FACILITIES

The housekeeping of the maintenance facilities and shops is extremely poor. The shop floors, pits and work benches are littered with scrap, abandoned and used parts and old materials that give a continual disorderly appearance. This creates safety hazards and reduces production and working efficiency and is not conducive to proper equipment maintenance. It is not to be expected that workmen will do effective and clean work under such conditions.

These conditions are partially due to old and obsolete buildings, facilities and shop equipment. However, much could be done to improve the conditions by simply disposing of the scrap parts that are laying about, prompt disposal of parts to be salvaged, orderly piling of usable materials and parts and adequate and properly enforced janitorial services.

A general cleanup program should be made and all scrap and abandoned materials disposed of. Places should be designated in each shop for temporarily storing parts that are to be scrapped or salvaged when they are removed from service and a regular procedure should be put into effect requiring these parts to be promptly transferred to the scrap docks or stored in the Store Department under control until they are to be repaired. Adequate and properly maintained janitor service should be put into effect. The interior and exterior of buildings should be painted, as well as work benches, and shop machinery and equipment, to give a continual neat and clean appearance.

ACCOUNTING AND COST ACCOUNTING

The Municipal Railway uses the ICC Uniform System of Accounts for electric railways for their entire operation. This accounting system was designed for accounting pertaining to electric street cars and is not suitable for the motor coach operation. The Railway has super-imposed the motor coach operation on the above accounting system by arbitrarily classifying the costs and expenditures of this operation to what they interpret as similar costs and expenditures in the rail operation. For example, motor coach fuel cost is charged to Account 59, which is the "Power Purchased" account of the rail operation applying to electric energy. This procedure does not conform to that used by other transit operators and therefore comparisons of cost cannot be made, thus prohibiting the advantage of a uniform accounting procedure for the motor coach operation. The Majority of transit operators use the ICC Uniform System of Accounts for Motor Carriers.

The Railway segregates the revenues and costs between street car, trolley coach, motor coach and cable car by using sub-accounts to designate these operations. They report certain sub-accounts within some of the groups to show desired segregations of cost. For example, Account 88 is "Pension Cost", Account 88A is "Sick Leave", Account 88B is "Sick Leave - Medical Fees." Similar sub-accounting is used in the equipment, transportation and other groups of accounts. Sub-accounting of this nature is in common use by the transit industry and is good practice as it permits additional analysis of costs by the management and supervisory forces. The Railway does not go far enough in cost accounting breakdown, especially in the maintenance group of accounts. Cost accounting in this group should be designed to segregate the cost of the various types of street cars, motor coaches and trolley coaches to permit analysis of individual types. For example, cost of maintenance should be segregated between the PCC cars and the various types of older cars between the various makes and types of motor coaches; and wherever there is a substantial difference in the age of the car or coaches of the same make. These costs should be segregated - otherwise the old equipment may be continued in service at an excessively high maintenance cost when it would be much more economical to replace it.

Without cost breakdown of this type to guide them, the supervisory force cannot be expected to detect and eliminate excessive costs due to abnormal conditions.

In the equipment departments the major portion of charges to the various accounts originate with individual daily time cards and material orders or requisitions. At present the working force is not trained to apply the proper account to these time cards and requisitions. The workman notes on his time card a brief description of the work he has done, and after it is signed by his Foreman it is forwarded to the Accounting Department, where a guess must be made as to the proper account to which the work should be charged. This undoubtedly results in many inaccuracies. The Storekeeper inserts the accounts on the material requisitions and likewise must guess which is the proper account by interpreting a brief description on the requisition.

In the equipment group the workmen fill out their time cards at the end of the day. Usually these men work on various assignments during the day that involve several different accounts. Since they are not trained in accounting procedure, and many have no knowledge whatever of it, they make little or no effort to accurately segregate their work hours. For example, it is much easier for them to write "8 hours motor repairs (Account 33)" to cover a full day's work than to enter -

4 Hours Motor Repairs (Account 33)
2 Hours Removing Air Cover (Account 30)
2 Hours Oiling Motors (Account 70)

It is inevitable that under the present procedure there are many inaccuracies in the primary charges and these are reflected in the final accounting. To cite one instance of actual observation time cards of one entire car house crew were found to be fully made out and signed by the foreman at 11:30 A.M. when the work day did not end until 5 P.M. It is obvious that such procedure cannot result in accurate allocation of time.

RECOMMENDED COST ACCOUNTING PROCEDURE

The Railway should immediately adopt the ICC Uniform System of Accounting for Motor Carriers for application to motor coach operation. An accurate accounting manual should be prepared to contain all accounting rules and all accounts and subaccounts with clear instructions as to how to apply them to time cards and requisitions. These manuals should be issued to the working forces and employees should be schooled and required to apply proper accounts to the time cards and requisitions. The workmen should be required to use a "Work Card" for entering their time whenever they change from one job to another, and use the time segregations shown thereon for making out their "Time Card" at the end of the day. These work cards should be checked by the foreman in charge and they will act as an automatic supervisor as the workman must show how long it took him to do each job. This is of great assistance to the foremen who supervise large areas such as car house and garage floors, and cannot keep the crews under constant visual supervision.

GASOLINE AND DEISEL FUEL

Fuel deliveries are now received by the Garage Section. The delivery truck meters are read and checked against the stick readings before and after deliveries. There are no intake or receiving meters for the fuel at any of the garages or receiving points and no temperature adjustments are made for fuel deliveries.

Prescribed routine reports are made at each garage station and daily balances are made between inventories, receipts and disbursements in a very effective manner and forwarded to the Accounting Department together with the original fuel station issue slips showing the fueling of each coach.

The Stores Department should receive and account for the deliveries of all fuels and be custodian of it until disbursed through the fuel station pumps and meters. All future fuel contracts should include a temperature adjustment provision.

TIRES

Tire rentals paid for the year 1948 were $254,737.48. Municipal Railway has a tire mileage contract with one of the major tire companies.

There is no provision in the contract pertaining to the expected life of the tires or protecting the railway against inferior tires that might have a short life or give excessive failures. In fact, under the present contract, the shorter the life of the tires, the higher the mileage rate becomes and the greater the expense to the railway. It is the usual practice to adjust the year to year mileage rates in the ratio of the average miles per scrap tire of the last 12 months with that of the previous 12 months. However, there is usually also a provision for adjustments to rates so established according to market fluctuations of cotton and rubber prices.

There appears to be no logical reason why the first cost of new tires for new coaches added to the fleet should be used in calculating the new rates for the whole fleet of coaches. To do so distorts and increases the rates without justification. If no additional new coaches were obtained the new rate would be lower than if additions were made to the fleet. If the rates are sound and fair for operating the coaches on hand, they should be just as sound and fair for operating additional coaches.

On account of the above-described method of calculating rates as contained in the present contract and because of the large number of additional new coaches that have been added to the fleet, the tire mileage rates appear to be more than 50% higher than they should be.

The Municipal Railway records the mileage of individual tires; however, no regular or periodic reports are made to show the average miles per scrapped tire.

Due to the extraordinary hilly conditions and rough paving encountered in the Municipal Railway Service, it is logical to assume that the life of tires is lower than that experienced in cities having less hills and better street surface. However, the present high tire mileage rates are out of proportion to these differences.

An attempt should be made to renegotiate the present contract to obtain more fair rates than those that now prevail. The contract should also contain a penalty clause of cancellation if blow-outs exceed a prescribed number per month. It is certain that the method for adjusting the rates annually should insure the tire company's effort to obtain the maximum mileage from the tires and thus result in the best service to the railway.

BATTERIES

Battery plates, separators, boxes and other materials are purchased in quantity and assembled into batteries at the 24th and Utah Division Shop. The labor and material used to do this work are charged directly to maintenance Account 39A, Motor Coach Engines and 39E, Motor Coach Bodies, one half to each. Account 39A contains all maintenance costs of engines, engine accessories, and clutches and Account 39E contains all maintenance costs of bodies and body accessories and, therefore, no analysis of actual battery cost can be made.

It may be more economical to manufacture batteries in the railway shops than to buy them from outside sources, assuming the railway facilities and assembly methods are properly set up and controlled. However, it is desirable to segregate the costs of manufacturing the batteries so that such costs may be analysed from time to time to determine the relative economy of manufacturing them or buying them from outside sources and also to obtain better inventory control.

Whenever batteries are to be manufactured an individual order should be issued authorizing the job and designating the quantity. All costs of labor and material should be charged to the order and a completion report in detail issued by the Accounting Department and a copy sent to the Superintendent of Equipment, for his information and files.

NEW EQUIPMENT AND MATERIALS IN STOCK

New equipment and materials are drawn from stock with Material Orders. A major portion of this material is used immediately and the operating account and class of equipment is charged directly with it. Small stocks of new materials of some items, such as bearings, lamps, spark plugs, screws, bolts, etc., are drawn from stock and charged to operating accounts and stored in the shops of the using departments. This is considered necessary as most of the storerooms are open only 8 hours per day and none are open 24 hours a day even though servicing and maintenance crews are on duty in the car houses and garages at all times.

Wherever maintenance crews are sufficiently large to create a reasonably steady flow for their use, it is desirable to maintain the necessary stores service for them. Interruptions and delays caused by the non-availability of material and supplies for the working crews result in both lost time of workmen and equipment tie ups. The latter either creates the necessity of greater investment for spare equipment or sacrifices passenger service on account of the non-availability of the rolling stock equipment.

It is desirable to keep small supplies of some inexpensive items, such as, nuts, bolts and washers at the work benches or readily available to the working crews to avoid time lost and to reduce clerical detail that would be involved if such items were requested only when used. However, these items should be kept at a minimum and their consumption periodically checked by the Stores Department.

A storekeeper should be on duty to make material and supplies readily available wherever the demand of work crews is sufficiently great to warrant their service. When demands of work crews are limited to occasional requirements, then an arrangement should be established by the Stores Section and the using department that would authorize and permit the supervisory officer, or his representative on duty, to have access to the material and be responsible for its issuance and recording.

SCRAP, SALVAGE AND SECOND-HAND MATERIALS

No scrap, salvage, or second-hand materials are kept in the storerooms or are received back into the store accounts when removed from active service except at the 24th and Utah garage storeroom where certain repaired units received from outside shops or the Elkton Shops are kept in the storeroom at "no value." The repair of parts and materials for re-use is handled entirely by the using department. When parts are removed for repair, they remain on the floor of the car houses, garages, and shops until such time as the using department decides to repair them. After the repairs are made and they become useable second-hand parts, they continue in the custody of the using department and no record of their inventory is kept.

The above is bad practice and there are several undesirable results:

1. The salvaged parts lie about the shop floors and benches giving an untidy appearance and causing accident hazards.

2. There is no prescribed routine established for accumulation and storage of parts to be salvaged so that their quantity is known.

3. The repair costs are not accumulated on order numbers that permit an analysis of whether or not these costs are excessive.

4. There is no record of the quantities of salvage parts.

5. The use of second-hand parts without having a continuous record of their consumption interferes with the value of the "Average Monthly Consumption" record of similar new parts which may result in either deficient or excessive inventories of new parts.

6. The carrying of large volumes of salvage and second-hand parts in the operating accounts burdens and distorts those accounts.

All scrap and salvage parts should be promptly turned over to the Stores Department and proper credits issued charging the Stores Capital Suspense Account. The Stores Department should keep accurate inventories of these parts and when sufficient quantities of the salvaged parts have been accumulated to permit economic repair cost with respect to machine set up and handling orders should be issued on the Equipment Department or on outside shops to make the repairs. From these orders the cost of repairs should be analyzed to determine whether they may be reduced or whether or not it is more economical to replace them with new parts.

The Stores Department should keep the inventory and consumption records of second-hand parts on the same stock card or sheet with similar new parts. This will permit accurate information on the availability of all useable like parts and thereby permit minimum inventories. Proper credit requisition should be made at the time of removal of parts to be salvaged, crediting the operating account and charging the Stores Suspense Account. These credits should be made on the lower half of the same requisition form that is used for "Drawing From Stock" the new or second-hand part that is to be applied. A requisition having the upper half for "Charges" and the lower half for "Credits" insures the turning in of salvage parts and minimizes clerical work.

STOREKEEPERS

Storekeepers report to the Auditing Chief Clerk who reports to the Senior Accountant and the latter reports to the Director of the Bureau of Accounts. Storekeepers are responsible for material disbursements and inventories and are on duty for 8-hour shifts five days per week, except at the 24th and Utah Garage, which is kept open until Midnight. The Railway furnishes personnel from the Equipment Department payrolls to assist in storekeeping.

It has been a long established practice in the transportation industry for the Purchasing and Stores Department employees, disbursements and inventory of materials to be under the office of the system's Purchasing Agent. The transactions of purchases, issues and inventories are audited by the system's Auditor or Controller. It does not appear to be good practice for these two departments to be under one head.

All stores Department personnel and all materials and equipment not in active use or in the process of application should be placed under a Superintendent of Stores and he should report directly to the Railway system's Purchasing Agent. All Stores Department employees should be carried on a single payroll and an adequate force should be maintained to properly serve the using departments. It is thoroughly practicable to use a Foreman's Clerk of a car house or garage as a part-time Storekeeper. One man can act both as a Foreman's Clerk and also issue material to

the working force where such demands are limited. In cases of this kind, this man's time may be arbitrarily divided to the accounts affected.

ARRANGEMENT AND LOCATION OF PARTS - STORES.

The stocks of repair parts, materials and supplies that are carried in the materials and supplies accounts represented $748,429.74 as of December 31, 1948. This does not include the major material items which were purchased for the capital accounts such as cars, coaches, and the new poles and overhead line materials. Stock is maintained at the following locations:

Store	Location
No. 1	11th and Bryant
No. 2	24th and Utah (Garage)
No. 3	San Jose & Geneva Avenue (Elkton Shop Yd.
Stationery	Geary & Presidio (Geary Car House)
Kirkland Yard	Powell and North Point

Store No. 1 is a brick walled structure having the major portion of new stock parts, hardware and supplies used in maintenance of rail car and trolley coach overhead lines, and substations and also the stock of transfers for the Transportation Department. An oil house with a separate entrance is adjacent to the store building. Stock is distributed from this point by trucks to the Turk and Webster yard of the Line Department, the various car houses, and the Elkton Shops upon order.

The shelving and bins are old, obsolete, and inadequate for the proper storage of the stock. The whole place has an ill kept and disorderly appearance. There are between 6,000 and 7,000 items stored here and it is the policy for a three months stock to be kept for items that may be obtained locally and a six months supply for items that must be obtained from the east.

With the exception of overhead wire and cable, items are charged to the operating accounts when they are drawn from the store. The reel, wire, and cables are retained in the stock account and consigned to the Line Department. Daily requisitions are given to the Stores Department as this material is used.

Store No. 2 is located in the rear of the 24th and Utah Garage, and is well equipped with steel shelving, and gives a relatively neat and orderly appearance despite its overcrowded condition. All of the new parts, material, and supplies required for motor coach and automotive maintenance are delivered to this storeroom and later redistributed to the outside garages as required. At the time they are removed from this storeroom a charge is made to the Operating Account. The McAllister Garage and the Turk and Webster Repair Shop do not have storekeepers and keep a sizeable stock in small storerooms at these locations. Tires are included in the stock carried at Turk and Webster. As there are many different sizes of tires required for the truck and automobile fleet, this stock amounts to many hundreds of dollars; control is very loose and undoubtedly results in high loss and maintenance of excessive stocks.

It is reported that a storeroom similar to the one now located at 24th and Utah will be located at the new Ocean Garage and that when the new main shops are completed, a central store for all motor coach parts will be maintained at that point.

Store No. 3 at the Elkton Shop Yard is a central point for stock of Track Department materials, most of which is stored outdoors in the yard. There are also two small Quonset hut buildings used to store paint materials and lubricants and welding rods, street car bearings manufactured at Elkton shops and other car items.

Due to inadequacy of these stores the main shops obtain materials from Store No. 1, at 11th and Bryant, which is a very inconvenient arrangement.

Even though the proposed plans of the new shop intend to provide additional store space, the completion of this shop will not be effected for at least one or two years. It is very desirable that the majority of items that are used by the shops which are obtained from Store No. 1, be moved to Store No. 3 in order to make them more convenient for servicing the Elkton shops.

The Stationery Store is at Geary Division and issues are charged to appropriate operating account upon delivery to the store. The Storekeeper at this point devotes part time to handling a small storeroom of parts used by the maintenance crews of the Geary car house. Transfer stock is carried in Store No. 1.

Kirkland Yard is located at Powell and North Point Streets and is a fenced outdoor storage yard obtained as temporary storage for steel poles required in construction of trolley coach overhead lines and for rail and truck parts. It is proposed to dispose of this property at the completion of the Rehabilitation Plan.

MATERIALS AND PARTS MANUFACTURED IN SYSTEM SHOPS

Certain materials and parts used for maintenance are manufactured in system shops, the majority being done at Elkton shop.

The Stores Department initiates the orders for doing this work, using regular order numbers. These orders show quantity required and the description or specifications. However, labor and material are charged directly to the open operating accounts involved and are not accumulated by order numbers. This does not permit an analysis of the cost.

After parts are made they are turned over to the Stores Department to be held at "no value" until issued at "no charge" to the using department upon the presentation of authorized orders or requests. Items handled in this manner include trolley wheel, journal, axle and armature bearings, overhead line hardware and various items made from castings in the foundry and storage batteries.

It is undesirable to burden operating accounts with stocks of unapplied materials and parts, and it is not good practice to manufacture articles without knowing the exact cost for comparison with other means of acquisition. Based upon observations of work processes at the shops, it would appear that excessive costs are incurred.

All materials and parts manufactured in system shops should be charged to individual order numbers and the direct labor and material used should be segregated to the respective orders so that unit costs might be obtained and analyzed to determine whether or not economies might be effected, or more efficient production methods developed, or the purchase of the material or parts from outside venders or manufacturers might be more economical.

Whenever parts are manufactured in system shops and cost comparisons are made with products of outside shops, a proper allowance should be made for the "indirect

costs" of the system-manufactured product.

ADVANTAGE OF VOLUME PURCHASING VS. CLOSE CONTROL

The economic advantage of volume purchasing is acknowledged but minimum operating costs cannot be effected unless the products supplied permit an overall economy. It is often difficult, if not impossible, for a purchaser to give complete and exacting enough specifications to ensure equal service life or performance of the products offered by the various bidders. It is a well-known fact that many products used in the transit industry, which are made to general specifications included in requests for bids, will give a wide variation in service life and performance value. Many times these differences exceed 100 per cent. Service interruptions and the labor costs of replacements might easily offset the lower cost of an item that has a shorter life or lower performance value than a competitive product.

By way of illustration, a set of engine bearings might be purchased for $50 that would give an average life of 20,000 miles, as compared with another type or make costing $75 that would provide an average life of 100,000 miles, or 5 times as great. The labor cost of replacement of the cheaper bearings to give an equivalent life would be many times the high first cost of the better bearings which would at the same time eliminate equipment tie up otherwise required for replacement of the cheap bearings.

Transit operators use many products peculiar to the industry. The best sources for the procurement of these products is of prime importance to minimize delays and ensure the best economy by obtaining the proper equipment and materials in the shortest time. To do this it is necessary for the "buyers" to have a broad and up-to-date knowledge of transportation equipment and materials and their respective manufacturers and representatives in the area. Also, to know the transportation industry's practices with respect to annual contract purchasing and standard practices of manufacturers' services.

Purchase of railway materials through the City Purchaser is awkward, time consuming and costly in the final analysis and should be discontinued. A Municipal Railway Purchasing Agent should be appointed who would have full responsibility for all procuring, purchasing, storing, and disbursing of equipment, materials and supplies of the system. It might be possible for this officer to collaborate with the City Purchaser on certain annual contract awards to obtain the advantage of the additional volume requirements of other city departments to obtain lower prices. However, annual award of contracts for equipment, supplies, materials and parts should not be made without the approval of the respective using department heads. This is especially true in the Equipment Department. The head of this department should be the most qualified employee of the system to know the relative merits of competitive products used under his jurisdiction. All contracts should carry a clause that will permit the purchase of limited quantities of competitive products for test purposes.

FIRE PROTECTION

No organized fire crews are trained and maintained among the servicing and maintenance force at the shops, car houses or garages. Such a practice was in force several years ago, but was abandoned during the late war years as the high labor turnover caused the training and assignments to be too burdensome. At no location was adequate fire fighting equipment found. There is no prescribed maintenance standard or routine inspection of the fire fighting equipment and there is no one individual or office vested with the assignment and authority to perform this important function.

The large amount of highly inflammable fuel, together with many other inflammable materials, such as, lubricants, woods, waste, synthetic fabrics, used and stored in shops, buildings and yards, including the vehicles themselves, create an extraordinary continual fire hazard. These hazards are increased by the use of welding torches and arcs, soldering pots, extension cords used in maintenance work, the backfiring of motor coach engines, short circuits in equipment wiring, and the normal carelessness found in relatively large groups of employees not under direct visual supervision.

There is an additional fire hazard caused by unrestricted smoking privileges during all working hours in all locations except those immediately adjacent to motor coach fueling stations.

Adequate fire crews should be properly trained and continually maintained among the work personnel at each storage and maintenance station. Fire drills should be held at not less than two-week intervals. An ADT call system should be installed at all car houses, garages, shops, stores, warehouses, and wherever valuable system property is housed or stored. Adequate fire protection equipment should be installed at all of these points.

Proper maintenance standards should be established and routine inspection periods followed for fire protection equipment at all locations. Also, regular reports should be made of inspection dates and condition of equipment, as well as fire hazard conditions.

Extinguishers carried on the vehicles should be inspected, serviced and maintained by the crews that service and maintain other accessories of the rolling stock.

REPORTS AND RECORDS

Car House, Garage, and Shop Foremen have no assigned clerical help and now do this work themselves assisted only by their sub-foremen or selected mechanics. The lack of clerical help in this department appears to have resulted in minimizing clerical requirements in order to take away as much of this burden as possible from the sub-supervisors' force. At present there are insufficient records of equipment kept on servicing, inspections, repairs, performance and costs, to provide the supervisory force with enough factual data for their proper guidance.

The large number of units of equipment involved, the large work personnel in various locations in shifts covering the 24-hour day, the non-uniformity of the work carried on, caused by the countless variables incurred, make it totally impossible for any supervisory officer or group of officers to properly correlate and evaluate the actual conditions by merely visual supervision. To obtain proper information it is necessary to prescribe clearly-defined routine channels through which desired information will flow so that it may be periodically summarized into reports that may be analyzed and thus used by the supervisory force as their guide to effect satisfactory and efficient operation. Without information of this character the supervisory force cannot detect excessive costs or weaknesses in equipment performance and maximum economies cannot be effected or performance materially improved.

It is estimated that the foreman or sub-foreman on each shift in the carhouses spends two to three hours of his shift time on clerical and record keeping work. To them this is a necessary evil and the philosophy prevails - get it done whether it is right or wrong. As nobody has ever told them in detail the necessity for the clerical work or records, it is easy to understand the prevailing attitude. In the

garages, the clerical work per shift is almost a full-time job - at least a full-time job for a garageman who was employed for his technical skills and not for his clerical aptitude. Likewise, the usage of a foreman or sub-foreman for clerical work up to 1/3 of his time is a costly misuse of manpower.

A plan should be drawn up and a set of rules and regulations adopted clearly defining the procedures that are to be followed by the working force for both describing and accounting for their work time. A clerk should be allotted to each shop foreman to handle clerical detail so as to permit the foremen to spend the maximum amount of their time on visually supervising their work personnel. It is probable that some additional clerical help will be necessary in each of the offices of the respective superintendents in order to compile and otherwise handle the routine that will be involved in handling the extra records and reports. There is no question but the cost of all the clerical help will be only a fractional portion of the cost that will be saved in improved operation made possible by analysis of proper and accurate records.

COST OF MAINTENANCE

Maintenance of ways and structures and equipment is 20% too high. This conclusion is based upon comparison with other operations after giving due consideration to prevailing conditions and practices

Due to variations between these operators in the methods of grouping some of their costs, a complete comparison by each individual ICC classification could not be made; however, there was sufficient similarity in a number of the major servicing and maintenance accounts to clearly indicate that the Municipal Railway costs are considerably higher even though the appearance and performance of the rolling stock and the appearance of the track and roadway, buildings and yards are far below that of the other two properties.

There are a number of prominent reasons for these high costs.

1. Higher wages are paid by the Municipal Railway system. A comparison made of the relative wages of the various classifications of the servicing and maintenance personnel indicated that the wages are 3 to 41% higher, with a few isolated classifications being lower.

2. Abnormal overtime bonuses are paid by the Municipal Railway System for Saturday and Sunday work. Overtime is paid at time and one-half or double time (this varies between certain classifications) to car house, garage, linemen and switchmen crews and lesser extra time bonuses to cleaners, substation operators and salaried employees. On account of passenger service being provided on these days, it is necessary to regulate work service, maintenance crews, and substation operators.

   It is not usual in the transit industry to pay bonuses for Saturday and Sunday work of such employees; it is the usual practice to segregate the work force so that employees who work Saturday and Sunday are off duty on selected week days so that their work week is balanced with the others of the group.

3. Abnormal overtime bonuses are paid by Municipal Railway to the classifications mentioned in No. 2 above, for holidays.

Double time is paid to employees for time worked on 7 holidays per year when on a per diem basis. It is the usual practice in the transit industry to allow only time and one-half for six holidays per year.

4. Grades of unusual steepness (up to 19%) are encountered in the various routes served. These cause proportionately greater strain and wear and tear on the rolling stock and also permit greater abuse of equipment by careless or incorrect operation.

5. Street surface is abnormally rough on many sections of trolley and motor coach routes and results in a proportionately greater strain on the equipment, causing loosening of screws, bolts and rivets and breaking of parts. These rough surfaces cause some mechanisms to come out of adjustment and in general result in more frequent adjustments, repairs and replacements.

6. There is an abnormal amount of rough track which results in extraordinary strain on the rail equipment.

7. Poorly designed car houses, garages and shops and obsolete shop equipment and tools prevent normal working efficiency of the servicing and maintenance personnel.

8. A high percentage of obsolescence in the fleets of rail rolling stock, motor trucks and automobiles.

   Of the 338 active street cars, 111, or approximately 33%, are obsolete cars obtained from the Market Street Railway and 212, or approximately 62%, are obsolete cars originally purchased by Municipal Railway system. This is a total of 95% of street cars that are 20 to 36 years or more old, leaving only 5%, or 15, modern cars.

   The entire group of 23 rail service cars are more than 20 years old and are obsolete. Of the 52 motor trucks, 77% are from 9 to 23 years old and are obsolete and 46% of the automobiles are obsolete.

9. Failure to enforce operating rules and regulations results in a proportionate increase in equipment abuse with corresponding increase in maintenance costs.

10. An insufficiency of supervisory personnel in the servicing and maintenance personnel does not permit close enough supervision with resulting inefficiency in their production.

LAXITY ON OFFSHIFTS

A thorough investigation was made of the methods of operation performed by the second and third shifts at each garage and car house. Each shift is usually in charge of a sub-foreman who in turn reports to and is responsible to the day foreman. The four garage day foremen report to the Superintendent of Garages and the six car house day foremen report to the Superintendent of Equipment.

Except in the garages there is no scheduled lunch time for employees of the second and third shifts. Employees as a rule take their lunch period during times of inactivity or at their own pleasure. This system promotes laxity of punctual work habits and throws a greater burden upon the sub-foreman in control of supervision and scheduling of regular maintenance and repair work. The actual lack of control was verified by checking on individual shift crews which disclosed several instances where men were having lunch when the foreman thought they were working.

DISORDERLY CONDITION OF PREMISES

The housekeeping or general appearance of the interiors of the garages and car houses varies from location to location, but follow a common standard of disorderly arrangement. Primarily this condition can be attributed to:

1. The responsibility for this function has not been delegated to a particular unit or person within a unit.
2. The first shift passes the job to the second shift; the second to the third; and the third back to the first.
3. Low morale or lack of pride in organization as expressed by several employees of the second and third shifts was, "Why should we keep the place looking clean; nobody seems interested enough to visit us."

On March 18 and 19 an inspection was made of conditions and facilities at the McAllister Street Division, Bryant Street Storehouse, Bryant Street Substation, 24th and Utah Division, Geneva Car House, Elkton Shops and Yards, the Sutro Division and the Geary Division. Conditions observed on this field trip were deplorable.

Of all of the many facilities and properties previously inspected and observed, in other cities, in no instance had anything been seen that could compare with conditions uniformly observed, with few exceptions, at the facilities of Municipal Railway. It is difficult to describe the disorderly arrangement of shops and facilities, the hazardous placement of materials and supplies, the lack of system in arrangement of shops, tools and facilities, the disorderly nature of storage and supply rooms, the unclean and fusty atmosphere of many facilities and the utter disregard for cleanliness and sanitary conditions as related to personal convenience and comfort facilities of employees, and the lack of consideration for the possibility of damage by fire. The ordinary engineering vocabulary lacks the necessary shades of meaning to describe these conditions and to compensate, a series of many photographs were taken. Even the photographs cannot truly depict the status of certain locations observed. To get the true picture, color would be necessary. Several of the photographs however appear in the appendix hereof.

At the Geary Street car barn, which is the location of the General Administrative Offices and the headquarters of the General Manager and the General Superintendent of Equipment Maintenance, conditions were found to be worse than at any other location. In the main heavy car repair bay of the shop, equipment, materials, parts and tools were scattered in a heterogenious mess from one wall to the other with only sufficient aisle space to barely permit passage of workmen. Gradually the piles of materials have encroached upon what were formerly laid out as the limits of floor area to be kept clear for walking space, until little is left for that purpose.

One of the principal work benches in the main portion of the mechanical shop, a makeshift contrivance in the first place, had upon the floor in front of it a pool of water from recent rains. To keep their feet from the water a wooden board was laid on the floor as a bridge. From its general appearance the board had been used

for the same purpose for many months. Water from leaking skylights had dripped onto the bench into the tools and supplies and over stored material stacked on the floor.

One feature most prevalent throughout the entire shop was the large quantity of black greasy cans and containers partially filled with dirty oil of long standing, in most cases, with oil-saturated rags draping over the edges and onto the floor with, in many cases, ample coverage of the floor itself with grease and oil. In the main portion of the shop at Geary Street it is difficult to see the concrete floor, even in a small area due to accumulation of oil impregnated dirt. Long since the concrete surface has been built up to the point where it appears to be a continuous mass of dirt bubbles, rough and corrugated, and black with grease that has not been scraped away for many months.

Proceeding from this shop through the rear section of the car storage bays adjoining, a continuation of the littered condition was observed. Disorder was general. In the limited passageways between the stored vehicles and building walls were clutters of scrap metal, boards, car parts, and fragments of various types and descriptions. These areaways, due to limited amount of artificial light, are accident hazards of the first order due to the material resting on the floor over which workmen could easily stumble if, indeed, workmen should find it desirable or necessary to traverse these areas in the performance of their functions.

Metal lockers in limited numbers were located at the end of the bay against the concrete wall. These lockers were dirty from long accumulation of grease and oil and stacked on their tops was a number of items of ancient greasy discarded clothing, hats and caps, abandoned milk bottles and cartons, tin cans, rubbish, scrap papers, rags, and numerous other items too many to describe. Underneath them on the floor was a similar accumulation. Janitorial services as such had obviously not been evident in this section for a long period of time.

Proceeding into the bay where car washing is done, the same condition continued. Between the rows of stored cars were old benches, boards, cans, signs, and wheeled devises of a variety of character and design, piled between the columns with only a minimum of clearance to permit access of cars.

Adjoining this bay was the oil room. To describe the condition of this room would require the literary talent of more than an engineer. Oil drums with hand pumps were located at various angles and positions throughout the room. The room itself was walled by reinforced concrete on its four sides with a door leading into a storage bay of the car house. Piled on the floor not in an orderly fashion and not even thrown into the corner was a wide variety of debris of long standing and of ancient appearance. Rags, cardboard cartons, tin cans, scrap paper, boards, parts of mechanical gadgets, oil, grease and numerous other materials were thrown into scrambled masses with a generous supply of oil and dirt and on top of that over the floor was scattered puddles of water and rust from a leaking skylight. On one wall of the room which had been painted black to a height of about five feet, was a painted sign "Keep Clean". Scrawled across the blackened portion in large letters were the words "Kilroy was Here". Actually the condition looked as though something more devastating than Kilroy had been present to wreck its vengence upon the surroundings. The photograph of this room in the appendix, fails to portray the condition in its true light. Immediately outside the entrance to the oil room was another condition which presented a fire hazard and an accident possibility. Piles of old cans, boards and benches and other items were scattered about the floor. An oil room in a properly maintained transit facility is ordinarily one of the cleanest and most orderly spots on the property. Due to the nature

of the material stored, the inflammable character and the hazard it presents when allowed to smear the floor, unusual attention is ordinarily devoted tothe proper . care of such rooms.

Proceeding from this bay into the next, there was found a storage area consisting of wooden shelves from the floor to a considerable height against the wall and in the open area that would otherwise have been used by cars. These shelves were filled with cardboard transfer cases presumably containing records and files. Immediately adjacent to one that was located against the wall as shown by photo appendix, was a large sized steam radiator also located against the wall. On top of this radiator were piled discarded items of clothing, including overalls so saturated with grease and oil that they could not possibly have been used further, an old greasy hat and various other well lubricated items, draped over the radiator. In front of the radiator, piled against it and the adjoining wall, was an accumulation of old cardboard cartons, wooden boards and bottles. This corner provided one of the most potential fire hazards encountered anywhere on the property. If spontaneous combustion is a real hazard at any location, it certainly was at this point where the incubating heat for touching off the flame was ideally provided to the oily rags and materials by the steam-heated radiator.

From this point the trip went to the car service shop wherein were located a number of work benches and storage bins for parts and material to be used in repair of street cars. The arrangement in this section defies description. Cartons, paper bags, scraps and litter of all varieties were scattered over the floor. For convenience of workmen during leisure periods there was provided a small table with several chairs in various states of dilapidation. In the corner were piled large quantities of scrap materials of many types and sizes. A photo of this area is appended. In the rear will be noted a vase of flowers giving evidence that not all appreciation for orderliness has vanished.

Proceeding from this area to the work benches, they were found to be in a condition that few shop foremen with any semblance of pride would tolerate. Underneath the benches was piled item after item of various types and description, including representative pieces of probably all mechanical and electrical devices on all types of vehicles. The heaps of material were just thrown into place with no orderly arrangement and no cleaning before storing. The piles reached from the floor to the lower edge of the benches, creeping around the edges of the benches onto the top surfaces where a similar condition was found. Old scrap material and equipment parts had accumulated over many months, spreading from the backboard of the benches toward the front, encroaching upon the work surfaces until a mere few inches on the outer edge remained available for workmen to operate. This condition was typical of all of the benches in the shop. There was absolutely no order or system evident in any respect. The condition was intolerable and a direct reflection upon the ability and qualifications of all mechanical employees from the top level down.

Proceeding from these shops into the outer bays, inspection was made of the pits under the street cars. These pits are provided for access of workmen to the underparts of cars while stored on barn tracks. Being below floor level the pits apparently have been considered as an excellent depositary for any and all scraps, unused material and old metal for which no other ready location for storage was available.

These conditions just described were all found to exist in the Geary Street car house--the General Headquarters of the top executive of the railway and his immediate subordinates, as well as the General Superintendent of Maintenance under whose

jurisdiction falls the arrangement and functioning of all mechanical services, repairs and overhaul.

Similar conditions were found to exist at the other locations visited. Each one was a visual demonstration of the lack of control, discipline, interest, instruction and proper knowledge of transportation operation, maintenance and commonly accepted standards of practice.

At some of the older Market Street Railway facilities there might be some semblance of excuse for conditions of this character due to the antiquity of facilities that date back many years into the early history of transportation in San Francisco. At Geary Street, however, which was the pride and joy of the former Municipal Railway especially designed and constructed according to the then most recent methods and procedure, there is no excuse.

At most of the older facilities there is much wooden construction, particularly at the Turk and Fillmore facilities that constitute the headquarters for electrical overhead line maintenance, and in all cases, despite the real fire hazard, fire fighting facilities were observed to be highly inadequate.

At the Geneva car house fire hoses and nozzles are obviously of such age that their use is highly questionable. The hoses are so old and have been exposed to the weather for such time that they have undergone deterioration that would likely result in failure in case of need. One hose installation was rendered absolutely inoperative by the installation of a wooden box nailed in such a position that it forcibly rested against the fire hose valve handle preventing completely the possibility of turning on the water if it should be needed.

Proceeding from the antiquated subterranean shops and littered facilities of the Geneva car house across San Jose Avenue into the main Elkton shops, where major car repair and overhaul is conducted, these same general conditions were found. Obsolete overhead belt drive of the many ancient machines and devices suspended from wooden structures provide a picture that goes back fifty years or more. The accumulation of debris and scrap materials piled against the benches as well as on them, appear to date back equally far.

To a properly qualified safety engineer the interior of these various facilities would present a nightmare. It is unbelievable that a municipally owned facility could be permitted to arrive at such a state. It may be argued by the defense that the record speaks for itself and that accidents have been few and not serious. This, however, is no defense. For normal human beings to move about the shop areas as they are constituted and arranged and do so without frequent and serious accident can only be accomplished by an unusual degree of alacrity and nimbleness of foot, with a resultant loss in man hours, attention and consideration that should be devoted to the duties and responsibilities for which they are hired.

At most locations inspected, the practice was evident of holding in storage old parts and materials, much of which probably would never be used. Tons of scrap iron are scattered about the property throughout the shops, facilities and particularly at the Elkton Yards. A general cleanup program would be in order that would rid all facilities of such materials and at the same time bring in a substantial revenue at present high cost of scrap material.

A highly uneconomical process was observed at the Elkton shop where two men were engaged in the melting down of aluminum by use of a hand torch--an extremely slow process and highly costly per pound of metal reclaimed. Upon questioning the

supply foreman, he stated that these men were put on this type of work when things were slack. There certainly should be more productive endeavors to which their time could be put.

One of the principal sites of inefficiency and deficiency of facilities was observed at the McAllister Street Division. This division is devoted to motor coach operation and is the former location of the Market Street Railway McAllister Street car barn. Due to the ancient character of the structures formerly used at the location, they have all been demolished with exception of a small portion of one building that has been retained for employees' facilities and division headquarters. All maintenance work at this location is done outside open to the weather with highly inadequate facilities of all types. Photos of the general yard area, the outdoor service and repair yard and the tire maintenance facility are appended to this report.

It might appear that extremes have been adopted in emphasizing the above described conditions, but it has been deemed necessary as a means of attempting to convey the true state of affairs which might otherwise be cast aside as petty and biased criticism.

It will be noted that this inspection was made three months after the survey was commenced, giving ample opportunity for facilities to be put in order. The fact that they were not indicates indifference to the outcome of the analysis, assurance of nullification of resultant recommendations, or a lack of realization that conditions are not up to proper standard.

INSPECTION OF EQUIPMENT CLEANING

On March 23, 1949, at 6:30 a.m., an early morning inspection was made of street cars pulling into service from the Geary Street car barn and it was noticed that uniformly the equipment that had been presumably cleaned and made ready for service was only partially clean. Cigarette butts and match stems were lodged in the flutes of the aisle flooring and around the control mechanism on each end of the vehicle was litter of long standing. Under the seats toward the walls, particularly, was evidence of no cleaning. Almost consistently window sills and horizontal surfaces were black and dusty to the touch.

Proceeding from this location on the same day to the McAllister Division a number of motor coaches standing ready to go into service were inspected as to their interiors and the condition was much worse then found on the street cars. Particularly around the driver's seat there appeared to have been little attention given to sweeping. One consistent point of litter collection was forward of the left rear wheel housing where accumulation of cigarette butts, matches, ashes, nut shells and other waste materials were lodged in considerable abundance. Seat cushions when rubbed with the hand produced black smudges, indicating accumulation of soot from some source.

As to the painted surfaces of the interior of the coach, accumulation of oil and dust of long standing was evident in most points where mechanical motion takes place, particularly around the upper portion of rear exit doors and the upper portion of front entrance doors. While making this observation it was noted that a shop employee started the engines of the vehicles in advance for warm up purposes, and raced the engines at an unnecessary high speed for several minutes.

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NOTICES POSTED IN MOTOR COACHES

Over a period of several months during the analysis it was observed that large

sized placards notifying the public of changes in service and routing were installed upon windows of motor coaches in a haphazard fashion with no apparent system or uniform instructions as to the number of notices to be posted, the arrangement within the vehicle, or the placement upon individual window panes. There appears to be no uniformity in this regard as between the several operating divisions. Duplicate notices are posted and a variety were observed, many of which had been partially torn off or were frayed at the edges but still allowed to remain in place.

To obtain positive information in this regard, observation was made at Powell and Market Streets of buses operating on Market on March 31st, during the morning peak involving 71 vehicles. The number of notices posted on the near side of vehicles varied from one to five notices per car as follows:

No. of Notices	No. of Vehicles
One	9
Two	16
Three	30
Four	12
Five	4

On the evening of the same day, one motor coach was observed with no notices, which was a rare exception.

On a previous day of observation at the coach yard at the McAllister division one of several coaches inspected in the early morning prior to pulling into service, No. 0220 had six signs on one side: one a notice of token discontinuance; one, notice of route change on the No. 7 and N lines; two frayed and torn "No Smoking" signs; two "Please Leave by Center Door" signs. These were on the right-hand side of the vehicle and on the left-hand side were three notices. This situation is another of the many indications of lack of proper instruction, control and attention to comfort and convenience of passengers. There should be definite rules established as to the installation of such notices, their size and point of location in the vehicle, the length of time to be posted prior to the event taking place, and the length of time they should be permitted to remain in place, as well as to cover replacement when obliterated or partially torn. In many instances it was observed that where notices had been torn off, the splotches of glue from the four corners remained on the glass.

It is the common practice that such placards and notices bear the printed signature of the Public Utilities Commission. On any other property, the signature would be that of the top operating official or a traffic manager. On this property it should be the signature of the General Manager.

TRACK DEPARTMENT

The organization chart indicates that the track department is under the direct control and supervision of the General Manager. In practice this line of authority actually exists, although the face to face contacts of the General Manager with the head of this department are infrequent, most orders and instructions are handled by formal typed communication or by telephone. Occasionally, the head of this department receives direct orders from the Manager of Utilities. An example was the order to make a temporary conversion of the McAllister location to handle buses.

The title of the head of the track department is F410a, Civil Engineer. The office, including the office personnel and the track equipment is located at

1345 Turk Street. The responsibilities and duties of this department are to provide regular and emergency track maintenance, inspection of all track, roadbed and switches, repairing track, replacing rails and roadbeds and the policing of all grounds and stations. Major jobs pertaining to track repair or construction of new roadbeds are let out on bid to private contractors. There is no formal procedure in existence pertaining to track inspection. Track which is known to be in poor condition is constantly checked and repaired while track known to be in good condition is not inspected.

This department is outstanding in that it is relatively self contained and as a result, it functions in an exemplary manner. The head of the department exercises complete authority as to discipline and is required to report to the General Manager on suspensions and dismissals, not for approval but for information. A carefully planned and well executed plan of training is followed which results in well qualified employees and efficient performance. If a permanent employee lowers his working production to a point where the foreman recommends dismissal, the employee will in most cases, after being warned by the department head, be transferred to another work gang. Here his work is closely observed and if it falls below a minimum standard, a recommendation for dismissal will be made. The only employee personnel record card maintained is a small sized address card.

A force report which shows the work performed each day, the number of personnel working, the weather and other data is prepared daily. No copies of this report are made. The original remains in the department and at the end of each year, an annual report of activities is prepared which gives the number, description and cost of all jobs finished. This report is sent to the General Manager. Prior to April 10, 1948, weekly progress reports were sent to the General Manager, but at his request they were discontinued.

The track department is divided on a functional basis into four sections,

1. Maintenance and Reconstruction
2. Track equipment and materials
3. Special work fabrication, and
4. Stations and grounds.

The number of personnel at the present time in the maintenance and reconstruction section totals 169, whereas it was 199 on January 1, 1948. The total requested in the budget for the period beginning July 1, 1949, is 143. This decreasing number of personnel is caused by the change over from street car to trackless trolley and bus operations. A typical work gang assigned to a rail repair job includes one track foreman, six trackmen, one pneumatic tool operator, one compressor operator, one track welder and one chauffeur. Except for emergency work, all work is performed during the hours of eight to five, Monday through Friday. There are two General Foreman trackmen who are assigned the overall work supervision of two or more gangs.

The track equipment and materials section is staffed with one senior clerk, two chauffeurs and two motormen on special duty. The senior clerk maintains reports and records pertaining to track equipment and materials, prepares the time roll for the department and makes cost and other statistical reports. A time card is filled out daily by each employee. The actual time worked on a particular job and the kind of work performed, by time, is entered on the time card. These cards are checked, approved and signed by the gang foreman. This time card function is handled in a careful and thorough manner and the detailed cost figures are accurate. The two chauffeurs in this section drive the money wagon and the Bryant Store delivery truck, respectively. The two S-104 Motormen operate the rail work cars.

The special work fabrication section is responsible for a function but not responsible for the personnel who assist in completing the function. The personnel who perform the various fabrications for the track department are assigned to a special machine shop unit under jurisdiction of the superintendent of equipment. Whenever an item is required, such as a frog, the head of the track department prepares a sketch or drawing plus a work requisition and sends it to the Equipment Department. There exists some confusion as to the responsibility for this function. The Superintendent of Equipment states that the employees are under his control and supervision and that he is responsible for production as requested by the track department. The head of the Track Department contends that he issues orders direct to the Foreman Machinist and that his request for services is only a matter of form for accounting purposes.

The stations and grounds section is responsible for the housekeeping and cleanliness of all stations and grounds. The personnel assigned to this section include two elevator operators for duty at Forest Hills and two trackmen who perform janitorial and gardening duties. They also make four checks daily of the track and housekeeping in the Tunnels. Wherever painting is required a work requisition is made to the equipment department.

CHAPTER X

SERVICE STANDARDS AND PERFORMANCE

SERVICE STANDARDS

Adequacy of transit service is usually measured on the basis of reasonable satisfaction to the traffic carried and a financial balance that will provide a proper measure of profit to the operator. In private operation the profit motive is heavily controlling as there must be earned a sufficient amount of revenue to offset current costs of business, amortization of investment and a reasonable measure of net return to the owners.

In public ownership the profit incentive is usually subordinated to some extent to the standard of service. Regardless of whether the enterprise is publicly or privately owned there is a direct relationship between standards of service and financial return, the only difference being the extent to which the public is willing to subsidize the operation, if at all, in securing a higher standard of service than might be possible under private ownership.

In either type of operation, as has been said heretofore, it is the unavoidable obligation of management to conduct the operation on the highest standard of efficiency and economy that is attainable. Even in public ownership, however, the public must realize that there is a definite upper limit in service standards above which the operation cannot be self-sustaining financially.

So far as this survey is concerned the policy in that respect is not predominant or controlling. The intent of this project is to determine the degree of efficiency with which the railway is operated and to identify those respects in which it falls short of maximum within reasonable limits of practicability.

In doing that it is essential that the basic elements applying to transit operation be defined and explained so that the foundation of the conclusions derived may be established. It is, therefore, in order to discuss the important element of loading standards.

DEFINITION OF LOADING STANDARDS

Loading standard as applied to transportation of passengers in the transit industry is the relationship between the number of passengers hauled on an individual vehicle and the number of seats available. Commonly, this is referred to as Load Factor which is the direct arithmetical ratio between passengers and seats expressed as a percentage. A load factor of 100 represents a condition where there are 100 passengers for each 100 seats. Load factors in excess of 100 per cent indicates more passengers than seats. Usually these standards are established on the basis of a maximum average standee load over a specified period of time based upon the total number of passengers and total number of seats on all vehicles passing the maximum load point within the prescribed period. The measuring interval is ordinarily arbitrary, being sometimes 20 minutes, 30 minutes or 60 minutes, depending upon the type of service and the character of loading. It is quite commonly the practice to establish some measure of permissible excess of passengers over seats during the peak traffic periods of the day, and to require that on the average during the off-peak period there be provided at least one seat for each passenger during a time interval usually longer than that applied for peak traffic. In any well-operated system it is imperative that in schedule making and service design some sort of loading standard formula be adopted and adhered to. The problem cannot be intelligently approached on any other basis.

FUNDAMENTAL CONSIDERATIONS

Loading standards have been in the past largely the result of arbitrary consideration with little uniformity in the various classifications of transit operation. It is common knowledge that the subways in large cities, such as New York, lay particular stress in designing their equipment to provide for a maximum area for standing passengers and a minimum number of seats in order that the exceedingly heavy peak hour demands can be met with a reasonable number of vehicles in an expedited service. Standing of passengers has, since the inception of the transit industry, been recognized as an absolute necessity and in those areas where extremely heavy concentration of traffic is found, there has been little question in the minds of passengers as to the necessity of such practice or as to their personal rights being infringed upon. During recent years, however, particularly in the west, there has been a growing tendency of passengers toward the thought that the fare they pay entitles them to a seat. This is definitely not the case and could not possibly be introduced as a standard practice. The fare paid by the passenger should be considered as the purchase price of a quantum of service designed to carry him from one point to another. The extent to which standing passengers should be carried is of course dependent upon a number of variables including the type of equipment, the classification of service, the time of day, the frequency of operation and the financial requirements of the carrier.

In determining what elements should be included in the loading standard formula the first, naturally, should be a reasonable degree of comfort to the passenger. This element is ordinarily converted into a consideration of what the passenger considers to be the standard of comfort to which he is entitled. In measuring the extent of discomfort the average person is inclined to apply different yardsticks, depending upon the nature of the activity in which he is engaged at the moment. A shopper will spend several hours on foot traveling to and from the various stores and shopping centers without any thought whatsoever to discomfort. On the other hand, a passenger who is required to stand on a transportation vehicle, regardless of how short the interval, is usually inclined to feel ill-treated and overcharged for the service.

In boiling the matter down to the essential elements we must take into consideration the practical aspects of the problem. These aspects can be divided into two classifications. First, the reaction of the passenger as to his comfort and convenience, and secondly, those elements that apply to the ability of the carrier to provide a high standard of service.

RELATION TO ECONOMICS OF OPERATION

It can easily be seen that from the operator's point of view and in the long run, the interest of the public itself, the establishment of loading standards is directly related to the various factors entering into the economic formula of the carrier. The two controlling elements in that formula are revenues and expenses. With a given revenue potentiality and at a fixed fare level, the operating ratio is directly affected by fluctuations in the cost of providing service. The cost of providing service is dependent upon a variety of items making up the various types of operating expenses, including as one of the major costs the payroll of operating personnel. There also is another important factor, in proper provision for depreciation and amortization of investment. It is obvious that to provide service for a given number of passengers the cost of performing that service will be considerably higher both from the point of view of payroll and maintenance when providing a seat per passenger than when providing service at less than a seat per passenger. For each vehicle that can be saved by applying standee factors a saving can be made in the cost of operations, the maintenance of equipment and in depreciation.

UNIFORM APPLICATION NOT PRACTICAL

It is further evident that no one uniform set of loading standards can be developed that will satisfactorily apply to all types of operation, even if such operations are conducted on a basis of reasonable profit, it being assumed, of course, that standing passengers are inherently required in urban heavy volume movements. It is important, however, to make this distinction between the two types of carrier; on the one hand the carrier who is operating profitably and on the other hand the carrier who is not. Considering the first classification it might be assumed that different loading standards should be applicable to purely urban lines as distinguished from suburban, interurban and intercity services. There must be some determination made as to the maximum reasonable distance a passenger should be required to stand on long haul intercity service. In between that maximum point and 100% load factor is the field in which intermediate standards must be established.

APPLICATION TO PROFITABLE OPERATION

When considering a property that is earning a reasonable profit, different consideration should be applied to the establishment of loading standards than on one that is operating at a loss. In such former instances a reasonable relationship must be established between the comfort and convenience of the passenger and the fare he is required to pay. If the revenue potentialities are such that a profit could be earned when providing a seat per passenger in all cases, then the only control would be the practical restrictions imposed by the physical capacity of street and rail facilities. It is questionable, however, as to whether in any case of urban, suburban or interurban operations the fares could be raised to the point where a seat could be provided for every passenger on a compensatory basis throughout the entire period of the day. The fare would be prohibitive. Therefore, in establishing one standard, a reasonable medium must be selected and the fare fixed to provide a reasonable degree of comfort.

PASSENGER TURN-OVER

In establishing loading standards based upon an arbitrary maximum limit of standing time, the formula should give consideration to the fact that although there may be standing passengers on a given vehicle during a period of time exceeding the limit established, this does not always mean that any one individual passenger has been required to stand in excess of the time limit. This is particularly true in a service where there is a heavy turn-over or inter-exchange of passengers en route. Where such is the case the passenger who has been standing for the longest time will have access to a seat as other passengers disembark so that the average standing time of the individual person may be considerably less than the total time during which the vehicle carries standing passengers.

METHOD OF PROCEDURE

In order to obtain the necessary data upon which to base conclusions relative to proper loading standards, detailed traffic checks must be made on various rail and motor coach lines and careful schedule and cost analyses computed. The traffic check data should be set up on charts to indicate the characteristics of travel and loading at various points along each line. The primary purpose of the detailed analyses is to determine the length of time that passengers would be required to stand if the load factor were increased and the number of vehicles by which the line assignment could be reduced correspondingly. From this analysis estimates can be made of the savings that would be possible in operating expenses by reason of more lenient loading standards.

PRESENT SERVICE

As has been indicated in previous sections, the one and only mission of Municipal Railway is to perform a local passenger transportation service to the people of San Francisco. It should have no other objective than to provide that service at the highest possible standard of service and area coverage commensurate with reasonable operating standards and at the lowest rate of fare that can be economically justified.

All branches of the organization and all of the various and intricate processes that constitute the framework of this enterprise are necessary only because they are indispensable to the paramount function of producing service. It is too easy in such a large organization for the individual departments, sections and bureaus to lose sight of the fact that their existence is dependent upon the accumulation of individual dime fares collected on the passenger-carrying vehicles and that their contribution is to the maintaining of adequate service that ensures continued revenue to pay their wages.

As has probably already been gained after reading the foregoing pages, there is obviously a lack of recognition of this important principle on behalf of a large percentage of the employees and officials of the Railway. Conditions cited heretofore could be expanded indefinitely in further substantiation of the fact that many deficiencies exist in service and consequently in organization and management. This report would be endless if all of the factual data collected in this analysis were to be included herein.

It is necessary, however, that a sufficient quantity of evidence be included to prove the points stressed. Therefore, this section will be brief and confined to those conditions that are considered to be primarily contributory to the inadequacies of service.

Many field observations, traffic checks, service checks and personal inspections have been conducted. To include the tabulated detail would be burdensome upon the reader and cumulative. Tables, graphs, charts and photographs have been prepared to record conditions as found. A large volume of personal notes recorded from day to day and including precise specifications as to time, place, date, person, equipment number and employee number have been compiled. It is upon the basis of such data that the conclusions relative to service and conditions generally have been based. Only a few additional points directly related to service will be discussed.

Service, to the public, means enough vehicles past a given point to carry the load without undue crowding and at a minimum of waiting time; courteous and considerate treatment; minimum time in transit; reasonably comfortable equipment; and clean equipment.

Service as performed now on Municipal Railway and for some time past, leaves much to be desired as regards the above-cited requirements. Equipment flow is not uniform or in sufficient volume, resulting in excessive crowding and waiting time. Aside from a small percentage, treatment accorded passengers is reasonably courteous and considerate. There are some offensive personnel that should be weeded out with dispatch and without fanfare. Most of these few display a smug attitude of security apparently based upon an assurance of exemption from discipline. Time in transit is excessive due to improper scheduling and traffic interference. Equipment is reasonably comfortable but sadly neglected as to janitorial service. Briefly stated, this is the service picture.

A traffic check made at 11th and Market Streets on a typical week day selected at random, including the J, K, L, M, N and 8 street car lines, showed load factors from 7 a.m. to 9 a.m. inbound to average 193% for all lines. On individual lines it ran as high as 232%. A summary is as follows:

	LOAD FACTOR BY LINES						
Time	J	K	L	M	N	8	Aver.
6-7 a.m.	90%	111%	128%	58%	113%	104%	102%
7-8	172	189	194	223	188	165	186
8-9	168	217	234	178	224	153	201
9-10	100	108	146	68	133	-	116
10-11	90	112	159	141	122	-	123
11-12	99	126	120	109	120	-	115
12-1 p.m.	106	121	137	105	122	-	119
1-2	100	125	107	113	100	-	108
2-3	53	85	66	59	73	-	62

Random checks were made of other characteristics on various lines and it is of interest that on the K line inbound in the morning peak, as a typical example, the ratio of moving time to standing time was 3.12 and average time at each stop was 22.6 seconds. On the N line outbound in the evening peak, the ratio of moving to standing time was 3.12 and average time per stop was 10.71 seconds.

In the appendix has been included a number of tables showing additional service characteristics and features of operation by lines.

SCHEDULE PERFORMANCE

Check made of the K, L and M lines at West Portal, outbound during the evening peak, showed cars running consistently behind schedule on an average of about six minutes and as high as 20 minutes, with seventeen cars 9 or more minutes late between 4:47 p.m. and 5:32 p.m., arriving times. Bunching of equipment at the outer end of lines was found to be common. The same condition exists on the main portion of lines in the downtown area also. This condition is largely due to poor schedule making. Schedules should be made to take into account actual operating conditions at all times of the day and not upon theoretical conditions.

Graphs were plotted of the headway gaps on the various lines as shown by headway recorders for the period February 1 to 16, 1949, and typical results are as follows:

Line	Average Base Headway	Daily Aver. No. of Gaps More Than 15 Min.	Daily Aver. Length of Gaps
B	6 Min.	9.9	19.6 Min.
N	5	9.3	18.9
D	9½	6.6	18.8
K,L,M	2½	1.8	18.3
41	8	7.5	20.6

A typical example of the character of causes for service gaps in excess of 15 minutes is as follows. Fifteen week days as taken from records of Central Control, are covered.

Reported Cause of Delay	Minutes Delay Total	Aver. Per Day
Disabled Cars	2,108	140.5
Accidents	1,607	107.1
Fires	643	42.8
Track, Overhead or Street Work	729	48.6
Traffic	3,615	241.0
Pullouts and Early Pullouts	244	16.3
Safety Doors	277	18.5
Heavy Travel	4,678	311.9
School Traffic	927	61.8
New or Slow Crew	708	47.2
Pullins	109	7.3
Relief Change of Cars	93	6.2
TOTAL	15,738	104.9

On the D line, between February 1 and 16, the average reported service gap was 18.8 minutes and the daily average number of gaps reported was 6.6 at a base frequency of 9 minutes. Central Control recorder logs show that the majority of these gaps are charged to traffic, travel and disabled cars. The same condition prevails on other lines and the occurrence is repeated day after day. Line N, with a base headway averaging 5 minutes experienced an average gap of 18.9 minutes, occurring on the average 9.2 times daily, including Saturdays and Sundays. At certain hours of the day traffic is heavy at certain points which causes delays as a daily occurrence at about the same time and of approximately the same duration. This recurring condition should be taken into account in building schedules instead of being permitted to disrupt service continually.

The schedules make no allowance in running time for individual line peaks, the principle being to allow a uniform time increase between certain point by about 2 minutes from 4 to 6 p.m. Thus a car leaving the Bridge Terminal at 3:59 is allowed 8 minutes to reach Powell Street on the base schedule, but should it leave at 4:01 on the peak schedule it is allowed 10 minutes. This running time continues in effect until 6 p.m. However, as it is totally impossible to maintain it, the recovery time or layover at the end of the line is increased. Thus on the L line between 11:30 a.m. and 1:30 p.m., $6\frac{1}{2}$ minutes layover is allowed at the beach on a single trip time of 49 minutes; but between 4:20 p.m. and 5:40 p.m. another minute of layover time is added. This results in cars being switched. On the B line, schedule maintenance is so erratic that in the morning on a 45-minute trip, $15\frac{1}{2}$ minutes layover is allowed. Thus if a car maintains its schedule, it will remain $15\frac{1}{2}$ minutes standing at the beach. However, this is an extremely unlikely occurrence. The added layover time is for the purpose of absorbing late arrivals at the end of the line so as to get cars out from the end on schedule.

The great disadvantage of this system of operation is that an operator, when due at a specified time at an outer terminal, will exert every effort to make his time and enjoy the long layover. This results in cars bunching. It is a common occurrence for three and four cars running within a few hundred feet of each other with a long cumulative gap of 13 or 14 minutes. If schedules were properly written, based upon actual traffic conditions, these inconsistencies would be eliminated.

STREET TRAFFIC INTERFERENCE

One of the principal sources of service disruption is street traffic interference due to the narrow streets with parking on both sides and illegal double parking which flourishes on a widespread basis. This condition is particularly onerous in

the commercial and business districts where trucks and commercial vehicles are loading and unloading. There is a general disregard of No Parking signs except on those principal streets that are regularly patroled by police officers.

On Market Street west of Fremont Street through the business area vehicles are prohibited by ordinance from occupying the rail area at safety zones with the result that street cars proceed with a minimum of interference from automobile traffic. However, the traffic control system is so arranged that cross traffic is regularly unable to clear an intersection within the signal interval and blocks Market Street against flow of traffic even when the signal is on the proceed indication. Buses on Market Street are subjected to greater interference than street cars due to their closer headways, and mixing with automobile traffic.

This same condition exists on a number of other heavily traveled streets. As an example, a street car starting across Van Ness Avenue, outbound on Geary on the green light, cannot reach Franklin Street in time for the green light. This is due in part to the slow rate of acceleration and speed of the old street cars. Whereas in most cities transit line routes are almost universally protected by boulevard stop signs, in San Francisco there are many routes and portions of routes that have no such protection which tends to slow down the service considerably in outlying areas.

On street car lines there is less interference from double parking than on motor coach and trolley coach lines. Where interference does occur, it is usually due to truck loading and unloading. This is particularly noticeable on Mission Street. Since street cars have been removed and motor coaches substituted, there has been a substantial increase in the amount of double parking. Interference from truck traffic is probably at its worst on Main Street between Howard and Mission on the No. 41 line, where trolleys frequently leave the wire as coach operators endeavor to pull around parked trucks. On Fillmore Street the No. 22 trolley coach service meets great interference from double parking.

Consideration should be given to restricting truck delivery and pickup hours as a means of speeding up traffic of all kinds.

PASSENGER STOPS

On the average passenger stops per mile on this system are greater than for the industry generally. This is particularly true in the downtown area along Market Street. During the power shortage last year use of skip stops was increased in the outlying areas, but subsequently have returned to normal. Application of skip stops is a real means of speeding up service and reducing cost substantially and anything that can be done to increase average schedule speed means improved economy. If, of course, the public, who owns the system, insists upon unusual convenience, then it will automatically be burdened with the excess cost either through high fares or increased taxation. A basic formula of skip stop application should be developed and adhered to without deviation regardless of pressure that might be brought to bear.

AREA COVERAGE

As will be seen by reference to maps attached, service coverage of the entire system is amply generous and in some locations, excessive. In San Francisco where the terrain is generally hilly, it is necessary to provide a greater coverage than in cities where the topography is predominantly level.

The principal locations of unjustified duplication of service are:

1. Operation of the No. 55 motor coach service on Sacramento Street one block from the California Street Cable, and two blocks from the Washington Street Cable.

2. Operation of rail lines on California, Clement and Geary Streets in the residential area.

3. Operation of motor coach service on Fulton Street and the No. 31 street car line on Balboa Street.

Such duplication is unjustifiably wasteful of Railway funds and penalizes patrons generally to satisfy the selfish interests of those few who were favored by excess service due to former competition between the two carriers. One of the principal reasons for consolidation was to effect economies, but to retain duplication defeats that purpose

LOCATION OF PASSENGER LOADING AREAS

In many cities during recent years there has been increasing controversy as to the proper location of passenger loading zones. Some contenders favor near-side stops and their adversaries promote the far-side stop. Usually the existence of controversy is due to the lack of technical understanding of the problems involved. Determination on the subject should be based upon a careful analysis of elements involved, including problems of operation, traffic interference, safety, and the public convenience.

No standard rule can be applied uniformly to all conditions. There are places for both types of stops. Where street car and motor coach service are operated on the same street, their stop locations should be alternated such as is done presently on Market Street. Where motor coach alone is operated, there is question as to the advisability of far-side stops except under unusual conditions, particularly when traffic on most successive streets is controlled by electric signals.

There is always a certain degree of confusion created in the public mind when different standards and practices are in effect at different locations. Uniformity of procedure is highly desirable in all phases of transit operation.

TURNBACK, LIMITED AND EXPRESS SERVICE

There is virtually no scheduled turnback service on street car lines, as indicated previously. The common practice is for vehicles leaving the inner terminal to run through to the outer terminal except when switched on Inspectors' orders. Establishment of scheduled short line service on a scientific basis combined with complete schedule making refinement would result in material economies.

Whereas express and limited service are practicable and of advantage on interurban and suburban lines and on long local lines, the lines of this system are on the average too short and the peak headways are too close to permit of any real advantage. For limited or express service to be practicable, headways must be sufficiently long to allow for a gain of the special service. In motor coach operation, however, there could probably be an improvement in service through expansion of express operation. With this type of vehicle one unit can pass another and proceed on special schedule, whereas street cars and trolley coaches cannot.

Actual switchback, or turnback, of equipment on this property is abnormally high. Data was compiled for the month of January 1949 covering all lines and, excluding scheduled switchbacks, the average per day was determined to be 365. For this property there should not be more than 40 or 50. These switchbacks consist of turning a car or coach back before it has reached the end of its run and in most cases results in requiring passengers to transfer to a following vehicle.

TWIN PEAKS TUNNEL OPERATION

One of the features of operation that has been given considerable time and study in connection with this analysis is street car operations through Twin Peaks Tunnel. Numerous elements of the operation were determined to be improperly controlled and hazardous in their conduct.

The Tunnel is double tracked, approximately two miles long, with no intersections and a down grade from west to east. There is a gradual curve on the western end and a relatively sharp reverse curve on the eastern end. Along the curve on the eastern end the two tracks are separated by a reinforced concrete barrier extending from floor to roof.

Operation in the Tunnel is presumably protected by a system of electrically controlled signals operated by ordinary switch contacts actuated by wheel flanges upon passage of cars. The actuating lever is of low spring tension and can be easily operated by pressure of hand or foot, thereby throwing the signal to false indication without passage of vehicle. Signals are not in all instances properly located. They do, however, afford a considerable measure of protection providing they operate properly, are observed, and rules of conduct are complied with. Numerous actual field checks were made of operations through the Tunnel and it was found that operating rules are consistently violated both as to speed restrictions, rear end protection, conduct of platform men as to smoking and inattention to duty, and compliance with signal control rules. Many such violations were recorded and the list is too long and detailed to reproduce herein.

On one occasion the observer was aboard a westbound car when the motorman failed to heed a red indication upon entering the eastern portal of the Tunnel. Upon questioning the motorman as to his reason for doing so, the reply was that he was acquainted with the headways and schedules and knew how far his leader was ahead of him. Upon being questioned as to what might happen if his leader were stalled without power, upon the curve, the motorman had no reply. After observing numerous instances of this character apprehensions were substantiated when shortly thereafter a collision actually took place in the Tunnel, under exactly the same circumstances, due to the stalling of a car in the Tunnel after losing the trolley, resulting in a rear end collision due to the following car proceeding against the signal. Fortunately the speed was not great and the damage and injury was light. The incident does, however, indicate the gravity of the situation and the need for enforcement of operating rules that have long since become ineffective due to continuous violation without disciplinary action. Smoking in the Tunnel by trainmen, although contrary to written rules, is practiced extensively. On one tour of inspection in company of a Railway official the conductor proceeded to smoke in his presence with apparently no thought of being in violation of rules. Upon questioning the Bureau of Personnel and Safety officials, there was obvious lack of knowledge of safety features in the Tunnel and the extent of compliance with safety and operating rules. It was only after a trip through the Tunnel accompanied by an official of that office, during which numerous violations were observed, that disciplinary action became evident. In that instance the action taken was a reflection upon the Railway organization and the Public Utilities Commission organization.

After employees have been permitted continuously for long periods of time to regularly and persistently violate operating rules without corrective measures, the mispractice becomes by usage somewhat established as permissable. Remedial steps should be applied along the lines of a new rule under such circumstances, as the guilt should be shared not alone by the employees, but also by management.

In addition to laxity of operation and adherence to rules in the tunnel, the present signal system is grossly inadequate and does not afford the degree of protection to persons and property that should be insisted upon.

SERVICE DISRUPTION DUE TO CONSTRUCTION

In planning heavy track reconstruction work it is evident that little thought is given to the effect upon service and the public convenience. One example serves to demonstrate the point which appears to apply uniformly only varying as to degree of disruption.

At the intersection of Geary and Market Street on the morning of April 1, 1949, one of the most severe traffic jams yet observed was experienced due to track work in connection with removal of the outside tracks on Market Street. During the height of the morning inbound peak service, the construction work was in progress with heavy trucks, compressor, wheelbarrows, power roller and other equipment arrayed along the street center with air hammers digging at the concrete track base. About twenty workmen were in the crew attempting to do a major job under conditions of less than 30 second street car headways. As a result the only real accomplishment during the peak hour was to deplorably snarl traffic and to completely disrupt street car and bus service on Market and Geary Streets.

Although Railway Inspectors were present doing a valiant job under the circumstances, they and the general public were suffering the results of immature planning and poor judgment on behalf of those officials responsible for the project. There is no reason for not delaying commencement of the job until after the morning peak had passed. It properly should have been done on a Sunday despite the premium labor cost. Actually with the freedom from traffic interference the productive man hours would unquestionably have resulted in a less costly job than under inefficient working conditions amidst heavy traffic.

In this particular instance, although police traffic control arrived on the scene somewhat belatedly, it was not put into operation at the points needed. Despite the serious condition on Market Street, there were numerous vehicles parked at the northern curb directly under prohibiting signs.

PERSONNEL, TRAINING AND PAYROLL

Previous chapters have described the work program of all principal departments and offices as to scope of jurisdiction, place in the organization chart and effectiveness of operations. The purpose of this chapter is to set forth certain additional data related to the specific features of personnel characteristics.

TOTAL PERSONNEL EMPLOYMENT

The total number of employees as of December 31, 1948, was 3,590. Of this number, 2,383 were platform employees; 632, shop employees; 180, track employees; and 395, office and supervisory employees. As of December 31, 1947, the Railway had 3,831 employees on its payrolls, of which number 2,641 were platform employees. This is a reduction of 258 platform employees and 241 in total employees. The conversion from two-man street car to one-man coach operation accounts for the decrease in platform employments.

During the year 1948 terminations amounted to 538 platform, 157 shop, 92 track, and 81 office and supervisory, a total of 868. New employees hired, by class, were: platform 310, shop 258, track 76, and office and supervisory 83, or a total of 727. Thirty-nine platform men retired through the retirement system.

Close cooperation between the Railway and the Civil Service Commission has resulted in instituting certain refinements in the selection and employment of platform applicants whereby there is more assurance of securing transit employees who are better qualified to cope with the increasing, hazardous traffic problems peculiar to San Francisco and its growing population. However, the present negative recruitment policy could well be changed to a positive one by applying age restrictions and minimum education requirements for the platform personnel.

A total of 288 new motormen, conductors and coach operators were processed and given work assignments during the year. In addition to this number, there were 22 trainees who, for various reasons, failed to complete their training. During the calendar year 404 regular, certified employees were given training on motor and trolley coaches. This program is being accelerated in order to keep pace with the reconversion program whereby coach operators are secured from the present ranks of motormen and conductors.

During the year, contacts were made on 23,776 occasions, 4,821 being with conductors; 10,638, with motormen; and 8,317, with coach operators. A comparison of employment statistics for several years by general classifications is as follows:

	EMPLOYEES				
	Car & Coach Operators	Shop	Track	Office & supervsry	Total
Municipal Railway Employees Sep.16, 1944	1,186	168	68	109	1,661
Market Street Employees Sep. 16, 1944	1,316	289	81	248	1,804
Total	2,502	457	149	357	3,465
Total Employees December 31, 1945	3,099	656	160	331	4,246
" " December 31, 1946	2,975	605	212	378	4,170
" " December 31, 1947	2,641	589	222	379	3,831
" " December 31, 1948	2,383	632	180	395	3,590
Employments during Calendar Yr. 1948	310	258	76	83	727
Terminations during Calendar Yr. 1948	538	157	92	81	868

TRAINING STATISTICS

	Motormen		Conductors		Motor Coach Operators		Trol.Coach Operators		Total	
	1947	1948	1947	1948	1947	1948	1947	1948	1947	1948
Employees Completing Training	549	115	529	79	355	94	-	-	1433	288
Employees Failing to Complete Training	84	15	35	2	71	5	-	-	190	22
Motormen & Conductors Transferred to coach	-	-	-	-	-	335	-	69	-	404
Follow-ups, Additional Instruction	15739	10638	5450	4821	5471*	8317*	-	-	26660	23776

*Includes Follow-up of Trolley Coach Operators

PAY RATE DETERMINATION

Monthly Employees

As to pay rate determination, monthly employees' salaries are established in compliance with provisions of Section 151 of the Charter pertaining to salary standardization. Under this Section it is specified that an independent and impartial comparison of salaries be made with those paid in other private and governmental agencies.

Craft Workers

Section 151.3 of the Charter provides that whenever any groups or crafts establish a rate of pay for such groups or crafts through collective bargaining agreements with employers employing such groups or crafts, and such rate is recognized and paid throughout the industry and the establishments employing such groups or crafts in San Francisco, and the Civil Service Commission shall certify that such rate is generally prevailing, the Board of Supervisors shall have the power and it shall be its duty to fix such rate of pay as the compensation for such groups and crafts engaged in City and County service.

It appears that in setting the rate of pay for the crafts, the Board of Supervisors has failed to place a monetary value on such tangible factors as vacation pay of ten days, sick leave with pay of 10 to 12 days annually cumulative to 156 days, retirement pay, and the intangible factor of job security. For example, a painter working for a private contractor and receiving $2.15 per hour for a 7-hour day on a 5-day week basis, receives no pay for any day not worked. If inclement weather prevents work or if the contractor has insufficient work to keep the painter busy on a full-time basis, he receives no pay. He gets no sick leave except under the Unemployment Compensation Act and he has paid for this by payroll deductions. He receives no paid vacation; is prevented by agreement from working certain designated holidays, but receives no pay for them. In comparison a painter employed by the Municipal Railway receives $2.15 per hour on an 8-hour day on a five day week basis; receives a 10 day (two week) paid vacation yearly and can accumulate sick leave up to 156 days (equivalent to six months. The Municipal Railway matches a monthly contribution to the Retirement Fund. He has job security and his yearly pay, with no overtime before deductions, totals approximately $4,200.

It is the usual practice in the federal government, state governments and County and City Governments to set a rate for the crafts taking into consideration the items listed above. This makes for a lower hourly or day rate than in private employment but makes for an equitable comparison.

As a comparative example at the present time the following rates of pay are in effect at all U. S. Naval installations within the Bay Area for the following classes of positions. These rates are based on an eight hour day, 40 hour week basis, with vacation and sick leave and retirement privileges.

RATES PER HOUR

Position	Municipal Railway	United States Navy 1st Year	2nd Year	3rd Year
Painter	$2.15	$1.63	$1.69	$1.75
Electrician	2.40	1.72	1.78	1.84
Carpenter	2.16	1.66	1.72	1.78
Machinist (Outside)	2.13	1.72	1.78	1.84

In shop crafts the rates of pay on Municipal Railway are from 5 to 44 per cent more than on other major western transit operations, garage crafts are above by from 14 to 38 per cent, linemen are above by from 4 to 62 per cent, car repairers are above by from 3 to 29 per cent, and track workers are above by from 3 to 54 per cent. The only classification that falls below outside rates is that of car and coach cleaners which are from 7 to 24 per cent lower.

Supervisory Employees

In comparing salaries paid in the present supervisory levels, it appears that the rates are similar to those paid in comparable positions by other private and public railway operations. Salary rates for this class of employee as shown on page 40 of the Salary and Wage Survey of the Civil Service Commission were based upon rates paid by Pacific Electric Railway Company in Los Angeles, San Diego Electric Railway, Key System Transit Lines of Oakland, and the Los Angeles Transit Lines. However, if the Municipal Railway is to build up its staff of qualified transportation department heads, increased salaries will be required to attract the class of experience and qualification necessary.

Platform Personnel

The Civil Service Commission is required to submit to the Board of Supervisors the two highest wage schedules reported elsewhere for bus operators and platform employees, and thereupon the Board is required to fix wage schedules for platform employees and bus operators of the Municipal Railway, which shall be the average of the two highest wage schedules so certified. Because of court interpretation and ruling, the rate for platform personnel has been set at the average of the two highest rates within a compensation schedule. This ruling has caused the additional expenditure for personnel services of several hundred thousands of dollars. The ruling also fails to consider the necessity for a compensation schedule which provides for salary increases based upon efficient service and seniority. Under the present system, the new employee is paid the same hourly rate as all other employees of the same classification regardless of length of service. If it is considered proper to adopt rates based on outside prevailing scales, then it is as reasonable to also adopt the form of graduated scale used almost universally on other properties. There should properly be established some form of premium for years of service and proficiency.

PROMOTIONAL EXAMINATIONS

An employee cannot take a promotional examination to qualify for a promotion more than one grade above his present classification nor to transfer to another classification except by special ruling of the Civil Service Commission. Permission is granted usually only if in the opinion of the Commission there are no qualified employees in the next lower bracket. This ruling may prevent the best qualified

employees of the system from taking promotional examinations for actual vacancies.

The various positions within a transportation system have characteristics peculiar to transportation and often require extensive training and experience of the candidate before they may be properly filled. The best training and experience can be obtained in actual transportation operation. Even in trade jobs such as automotive mechanics, electricians, and carpenters, the character of the work is peculiar to the type of rolling stock used.

The majority of the equipment and the character of the work in the Overhead Lines Department of a transportation system is distinctly different from that of power, lighting and communications systems. It follows that a first-class lineman must have actual experience in transportation work before he is qualified for a top assignment.

Employees in the Public Utilities group are given an equal status with railway employees in promotional examinations for positions within the railway. For example, General Clerks in the Bureau of Light, Heat and Power have an equal status with the General Clerks of the Railway when taking a promotional examination for a position of Senior Clerk. The same is true of Foremen when taking an examination for General Foremen. This arrangement results in diminishing the incentive of the individuals involved. Seniority rights are shared by all departments under jurisdiction of the Public Utilities Commission. If there is a lay off in one department of a job classification that is contained in another department, "job bumping" is allowed in order of seniority. For example, if a job of "Senior Clerk" is abolished in one of the five major departments of the Utilities Group, a series of "job bumping" may result that would cause literally dozens of Clerks to be shifted to jobs other than the one in which they might have had years of special training, likewise, a clerk with years of experience in the Railway group might be displaced by one from an entirely unrelated activity. It is common knowledge that an employer has a large investment in a well trained and efficient employee, which is obviously to a large extent wasted when that employee is shifted to a new type of operation. This practice appears to be another evidence of the under rating of the importance of transit operation.

MEDICAL EXAMINATIONS

A permanent employee may obtain advancement within the system if qualified by examination for such advancement. However, before an employee may be advanced to a higher job, he is required to conform with medical standards prescribed by the Civil Service Commission. If an employee does not pass the physical examination, the fact is brought to attention of his department head and can result in dismissal if it is decided that the defects might interfere with the employee's working efficiency.

It is not now the practice to require periodic physical examinations of regular employees. Therefore, it appears inconsistent to place a threat or penalty (retirement from service account of physical defects) on an employee for applying for advancement. This practice is inconsistent and unfair and undoubtedly results in qualified employees refraining from applying for advancement because of the fear that they may be unable to pass the physical examination and thus jeopardize their present position. In many instances the higher paid jobs require less physical strain than those in the lower bracket. This is especially true when an employee is advanced from a production job to a supervisory position.

The desirability of periodic physical examinations of the system's personnel is not questioned. Such a practice no doubt would be a great aid in preserving the health, improving the attendance record, reducing accident hazards, and in generally improving the working efficiency.

Physical examinations on a periodic basis are not required of operating employees. In the event of a man developing physical defects which would impair his efficiency as an operator, an endeavor is made to get him to retire. However, unless the man of his own volition requests sick leave, he cannot be ordered to take a physical examination. From point of view of a layman, without medical knowledge, but with experience in personnel, it would appear that some of the operators are in need of medical review. Considering the fact that the majority of the street railway cars are not equipped with deadman control and that since this analysis has been in progress, two men have collapsed at their controls, the situation appears to merit serious consideration. All men engaged in operating equipment should properly be required to undergo a physical examination not less frequently than every two years.

It must be realized in approaching this problem that motormen and coach operators are charged with the safety and protection of their passengers as well as persons on the street in other vehicles, and pedestrians. Where an employee is in a clerical position or working at one of the crafts, a sudden physical failure will usually not endanger anyone other than himself, but a vehicle operator propels a potential death trap in event of physical collapse.

It is true that the benefits of large casualty insurance policies offset the financial aspects of a serious accident, but it does not bring back life or use of amputated limbs.

Employees should not object to such examinations but to the contrary in the interest of their own physical well being should welcome them.

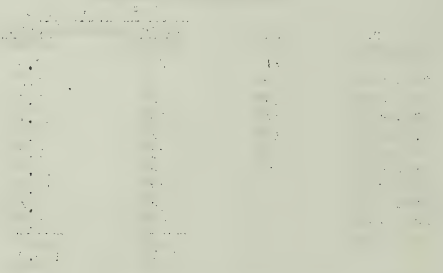
AVERAGE AGE OF PLATFORM MEN

Analysis indicates that based upon records of personnel at one division, the average age of conductors and motormen is 46 years. For the system, the average is estimated at 42 years, due to the larger percentage of younger men in motor coach service. Age grouping was found to be as follows:

CONDUCTORS AND MOTORMEN

Age Group	New*	EMPLOYEES	
		Number	Percent
21 - 25	31	37	6.9
26 - 30	40	62	11.5
31 - 35	24	45	8.4
36 - 40	14	65	12.1
41 - 45	15	53	9.9
46 - 50	2	66	12.3
51 - 55	2	58	10.8
56 - 60	0	67	12.5
61 - 65	1	56	10.4
66 - 70		28	5.2
		537	100.0

* Employed October 1, 1948 to December 31, 1948.



EMPLOYMENT TERMINATION

If an employee of the Railway is suspended pending discharge, he has the right of appeal in public hearing before the Manager of Utilities. Further appeal is permitted within a period of 30-days, to the Civil Service Commission. The Commission may uphold, modify, or overrule the decision of the Manger of Utilities and similarly the Manager of Utilities may pass judgement upon rulings of the General Manager.

Such a procedure is completely out of line with standard practice and definitely contrary to basic principles of proper management and organization.

For the Manager of Utilities to overrule a decision of the General Manager on employee termination cases involving relatively simple infractions of rules breaks down the confidence of workers in the General Manager, is a direct reflection upon the ability of the General Manager and also a reflection upon the Manager of Utilities for not maintaining sufficient control to prevent such embarrassment occurrences.

LABOR TURNOVER

Analysis of labor turnover is one of the easiest and least expensive method of determining employee reaction to the internal program of personnel administration. Also it gives management the opportunity to determine the nature and location of troublesome situations. Municipal Railway compiles a monthly force chart which shows total personnel, separations and additions for the platform, shop, track and office employee groups. In addition on a letter report compiled monthly, the reasons for separation are listed. Both of these reports are prepared by the employment processing section of the Personnel Division. Exit interviews are not included as part of the personnel program. As it is often difficult to ascertain the real reason for a resignation, skillful interviewing is necessary. Without an exit interview, the preparation of turnover figures is wasted clerical effort.

The high rate of labor turnover for the year 1948 is to a great extent due to a return to normalcy after the war years. The temporary and non-civil service appointments terminated in the shop, track, and office groups tends to give a distorted labor turnover rate.

It is recommended that an exit interview be used by the Personnel Division of the Municipal Railway. The skillful utilization of this tool will be of great aid in locating areas of low morale, assist in determining training requirements and will actually over a period of times, reduce labor turnover, which is costly to the Railway.

LABOR AGREEMENTS

There are no written agreements between the Municipal Railway and the several unions representing various groups of employees. Section 151.3 of the Charter provides the means of establishing the rate of pay for the various groups or crafts employed by the City as explained heretofore.

In addition to the provisions of that section, the following allowances and working conditions are recognized by the Municipal Railway.

1. Time and one half is paid for: (a) time over 8 hours; (b) range or spread of work over 10 hours; (c) all work on the seventh day; and (d) six holidays if worked (New Year's, Memorial Day, July 4, Labor Day, Thanksgiving, and Christmas).

2. Basic day is 8 hours. On runs between 7 hours 45 minutes and 8 hours, an allowance is made to bring the time to 8 hours.

3. Car house report time takes full straight time for regular or extra men.

4. Instructing new employees, as provided in Section 151.3 of the Charter - 20¢ in addition to regular rate.

5. Cash Turn-in Time - 10 minutes straight time.

6. Accident Reports - 15 minutes straight time.

7. Allowances - Street car and trolley coach 5 min. and motor coach 10 min. time for obtaining outfit and taking out vehicle, and 2 min put-up time for electric equipment and 5 min. for motor coaches.

8. Reliefs - straight time making relief in front of car house or garage and 7 minutes at other points.

9. Travel Time - Straight time 1st relief, and on 2nd relief when 1st swing is a pull-in, away from car house. Straight time relief on road.

10. Pension Costs - Railway's contribution since July 1, 1947, 8.415% of gross railway payrolls.

11. Vacations - Two weeks annually.

12. Sick leave - 12 days per year cumulative to 156 days. Full pay from first day if illness extends over 5 days. Five days or less, no pay.

13. Disability Allowance - Provisions of "Workmen's Compensation Insurance and Safety Act of the State of California."

14. Breaking-in Time - Regular basic rate per hour for actual time worked. Qualified trainmen breaking in as motor or trolley coach operators are allowed time with pay not exceeding 24 hours for time worked breaking in.

History of wage rates for platform men and coach operators is as follows:

	STREET CAR OPERATORS		COACH OPERATORS	
	Per Hour	Per Day	Per Hour	Per Day
July 1, 1941	$ .75	$6.00	$ .825	$6.60
July 1, 1942	.80 - .875	6.40 - 7.00	.875	7.00
July 1, 1943	.85 - .925	6.80 - 7.40	.90 - .975	7.20 - 7.80
July 1, 1944	.90 - .975	7.20 - 7.80	.95 - 1.025	7.60 - 8.20
July 1, 1945	.90 - .975	7.20 - 7.80	.95 - 1.025	7.60 - 8.20
July 1, 1946*	1.00 - 1.10	8.00 - 8.80	1.05 - 1.15	8.40 - 9.20
July 1, 1946*	1.24	9.92	1.24	9.92
July 1, 1947	1.368	10.944	1.368	10.944
July 1, 1948	1.484	11.872	1.484	11.872

* Rates revised by charter amendment voted upon Nov. 5, 1946, and ratified January 7, 1947, retroactive to July 1, 1946, to $1.24 per hour for all operators.

BULLETIN BOARDS

All employees are expected to read and familiarize themselves with the material posted on the various bulletin boards. There is no uniform type of bulletin board used at the various locations and no uniformity of policy as to material or subjects allowable for posting. With few exceptions all division and car house bulletin boards are backly in need of an effective housecleaning as to appearance and removal of accumulated outdated material.

A uniform standard of bulletin board should be placed at each division, at each car house and each garage in a location as nearly standard as possible. The duty of posting and cleaning material on bulletin boards should be delegated to one employee at each location and a policy should be established pertaining to subject material allowable for posting and length of time to remain on the boards.

PERSONAL APPEARANCE

Rule 8 of the Official Rules and Regulations plus several duplicating general bulletins prescribe the required uniform for platform employees, but violations are frequent. Inspectors report uniform violations, but the responsibility should be that of the Division Dispatcher and not field Inspectors. Uniform and appearance inspections should be made regularly before the men are permitted to go on duty and the Dispatcher must have the authority to refuse runs to offenders and to report the indivisuals to the Division Superintendent for necessary disciplinary action which should be taken.

COURTESY

Rule 19 of the rule book requires that all employees be polite and gentlemanly in their dealings with the public, their subordinates and each other. Other than Section 4 of this rule, there is no established disciplinary policy for violations. A reprimand or a warning is the usual discipline administered by a Division Superintendent for complaints concerning discourteous treatment.

SAFETY RULES

Rule 24 of the rule book covers the subject of safety, but no policy relative to the degree of disciplinary action in the event of violations. The records disclose many violations of safety rules, but discipline usually consists of a caution, a reprimand or a warning. For comparison, a platform man failing to report for work is suspended, even for the first offense.

BULLETINS AND DISCIPLINE

An effort is made to overcome the deficiencies in basic operating supervision by the repeated issuance of general bulletins which are posted on bulletin boards throughout the property. There appears to be a general disregard for bulletins on behalf of many employees and despite them, complaints and reports of violation continue to flow. When the volume becomes alarming, another bulletin is issued containing slightly more terse language. When complaints continue, another is issued with tough language. This does not correct the situation so the next bulletin on the same subject will probably carry, in addition to terse language, the signature of the General Manager instead of that of the General Superintendent which appeared on previous issues. Usually this does not bring about compliance and the cycle continues.

Bulletins have no standard form either as to type, content or forcefulness. Superfluous words are usually contained in the bulletin and in most instances, despite the seriousness of the issue involved, they are closed by a gentle plea for compliance, such as:

No. 1085 - "Please give this matter your most careful thought and study."

No. 1110 - "Your Management trusts that it will not be necessary to apply penalties involving loss of time from duty in order to enforce this important rule."

No. 1139 - "Because of the seriousness and importance of strict adherence to this phase of your work, Management finds it necessary to warn all conductors that future violations and failure to abide by the rules of proper platform management will be dealt with severely from a disciplinary standpoint."

The above closing paragraphs are typical of many such bulletins and the response obtained has been highly unsatisfactory. No. 1139, cited above, applied to rules of conduct on the rear platform requiring the conductor to face rear with cord in right hand when signalling to start. Observation on any rail line will give evidence that this rule is violated by practically all conductors.

Another example of ineffectiveness of managerial procedure is cited by a series of bulletins all of which relate to one offense—Coach Stop violations. They are listed as follows, and quoted in part:

No. 887, May 17, 1947, Signed by General Superintendent of Transportation.
"In the future, it will be necessary to take very severe disciplinary action in instances involving carelessness in complying with this most important operating requirement. PLEASE BE GUIDED ACCORDINGLY."

No. 911, June 20, 1947, Signed by General Manager.
"PLEASE BE GOVERNED ACCORDINGLY."

No. 922, July 17, 1947, Signed by General Manager.
"Numerous bulletins have been issued relative to this matter and the Police Department has been very cooperative and patient in not citing drivers who have violated this law. However, this condition has now become so bad, and so many complaints have been received from the general public, that the practice of improperly stopping in a bus zone must cease immediately! The Police Department and the Municipal Railway hope that this practice can be stopped without having to take drastic action."

No. 1015, April 5, 1948, Signed by General Manager.
"It is necessary that alloperators closely observe the rule relative to stopping at the curb, otherwise severe discipline will follow for those operators reported by the Police Department.

No. 1070, Aug. 2, 1948, Signed by General Manager
"In the future, any operator found violating our rules relative to curb loading will be removed immediately from either motor coach or trolley coach operation."

No. 1132, Jan. 24, 1949, Signed by General Supt. of Transportation.
"... I am informed that the Police Department is about to take official action and issue citations. Your attention is directed to General Bulletin No. 887, appended hereto, issued May 17, 1947, on this subject matter which is self-explanatory."

Inclusion of this data might appear to be trivial, but the implication is actually highly significant when considering the solution to the railway's problem. The above brief list in and of itself, without any further analysis or study, should indicate a definite course to follow in correcting the transit situation.

It indicates a conclusive lack of administrative chain of command. The series of bulletins started over signature of the General Superintendent, then over the signature of the General Manager. After five repetitions the sixth went back to the General Superintendent. It further provides unquestionable evidence that both of the top management officials were aware of the condition. It serves to prove that subordinate officials were not taken to task for lack of corrective measures. It offers a simple answer to the continuing violations which occur from day to day on any motor coach line observed. It emphasizes the complete absence of regard on behalf of some operators for the orders of superiors and the weakness of management in attempting to run the railway on paper instead of on direct and effective action.

Upon verbal inquiry, the General Manager states that he takes full responsibility for disciplinary action. If a Division Superintendent desires to impose disciplinary action other than a warning or a reprimand, he must obtain authority from the Superintendent of Transportation.

The General Manager spends from one to two hours daily reviewing, approving or amending disciplinary requests made by Division Superintendents. Neither the General Manager, the General Superintendent nor the Superintendent of Transportation should concern themselves with normal disciplinary measures. The action should be handled to a conclusion at the Division Superintendent level and only in event of serious question should higher officials become involved.

Lack of disciplinary policy within the limits of which the division or department heads can operate not only places an unnecessary time-consuming burden upon the General Manager, but also breaks down morale and creates a "buck passing" procedure.

A review of the disciplinary record of two divisions for February 1949 shows the principal reported violations as follows:

Nature of Offence	No.
Failure to register fare	6
Smoking on duty	11
Passing up passengers	12
Failure to make stop at arterial	25
Excessive speed	13
Running same block with leader	20
Running ahead of schedule	27
Failed to block wheels	17
No run number or line number	16

For that same month and covering the same violations, the disciplinary action taken was as follows:

Type of Discipline	No.
Interviewed	3
Instructed	35
Cautioned	22
Reprimanded	49
Warned	81
Suspended one day	3
Suspended two days	1
Suspended ten days	2
Suspended fifteen days	1
Suspended Pending Dismissal	1
Terminated	2

Analysis of the disciplinary measure taken with respect to individual employees was prevented by refusal of the General Manager to permit an inspection of the personal records. There is sufficient evidence by statements from various employees to indicate the existence of partiality and continued employment of repeating offenders who should have been discharged on the basis of their records.

In closing this portion it would be incomplete without citing one case of flagrant insubordination on behalf of a motorman which was doubly offensive due to the fact that it was directed at both an Inspector and an Instructor while all were on duty.

The observation was made personally by one of the surveying group who was in company of the Inspector and the Instructor. At West Portal, Inbound run 16K, Car 91, 5:38 p.m., motorman arrived without fender on the leading end of the car. There was a fender upon the rear of the car. The Supervisor and the Instructor boarded the car through the front gate. The motorman was seated upon his stool with feet high up on the side of the fare box railing, level with the top of the controller. The Instructor quietly told him to sit properly and to put his feet down, at which the motorman replied in a loud voice that he wanted to sit that way, no one had ever told him to sit otherwise, and he was not going to be spoken to like a dog. The Supervisor and Instructor then told him to take the rear fender and fit it upon the front. This he refused to do, stating that it was not his job. Thereupon the Instructor and the Supervisor changed the fender themselves and the man was permitted to continue operating his car. Proper action would have been to remove the culprit forthwith and for either the Instructor or the Inspector to take over the controls. Such blatant impudence and insubordination should not be tolerated under any circumstances.

OVERTIME

Overtime conditions and rates applying to platform men have been described heretofore under Labor Agreements and Table XII of the appendix tabulates overtime hours worked by various classifications.

Analysis was made of the amount of overtime cost as incurred by the various departments and classifications, but time did not permit of a complete tabulation of the results. The study did reveal, however, that large sums are paid annually in overtime both on salaried and per diem employees. For the fiscal year 1948-49 provision is made in the budget for overtime payments to 363 employees at a total cost of $202,000. An estimate of overtime cost of platform employees due to non-scheduled causes amounts to about $139,000 per year. There is considerably more overtime than

represented by these two amounts when taking into consideration scheduled overtime of platform men and overtime of shop and service employees. In total the annual amount would approximate $450,000 including all sources.

By a detailed study of the various overtime employees there could no doubt be a material reduction in total overtime cost without sacrifice of efficiency.

Segregation of payroll cost of platform men for February 1949 is as follows:

ANALYSIS OF PLATFORM PAYROLL
February 1949

	Hours	Percent
At Straight Time - $1.484 per hour		
Sick Leave	14,897	3.67
Vacation	11,065	2.73
Special Duty	8,896	2.19
Other - Scheduled Time, etc.	336,880	83.09
Total	371,738	91.68
At Overtime - $2.226 per hour		
Scheduled	20,435	5.04
Traffic Delays and Other	2,738	0.68
7th Day	2,993	0.74
Special Duty	133	0.03
Other	7,432	1.83
Total	33,731	8.32
COMBINED TOTAL	405,469	100.00

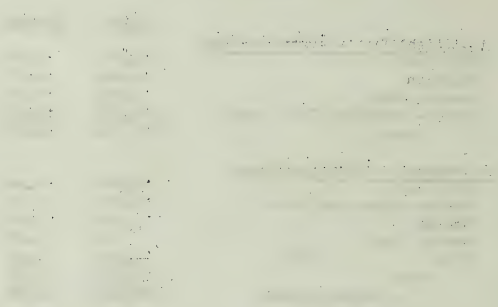
TRAINING

Platform men and coach operators are processed and trained by the Training Department which is under jurisdication of the Director, Bureau of Personnel and Safety who reports directly to the Manager of Utilities according to the organization chart, and not to the General Manager of Municipal Railway. This arrangement has been explained heretofore in discussing the different bureaus and their relationship to the railway. The Training Department is under direct supervision of a Chief Instructor who has jurisdiction over three training divisions, each of which applies to a specific type of equipment.

Employees sent to the Chief Instructor from the Processing Section of the Bureau are appraised as to the type of work to be assigned and then enter the training procedure.

Four days are devoted to classroom instruction and practical operation of equipment and upon completion of the course, trainees are either passed or rejected. Some trainees with exceptional aptitude or previous experience are graduated on the second or third day.

Upon graduation the new employee is assigned to a training officer at one of the divisions who schedules him for training on each line out of that division under instruction of qualified regular platform men or operators. There is no set rule as to the individual operators to whom a trainee is to be assigned. It is optional with the regular operator as to whether he will accept a trainee or not. After his division run training, which requires from 10 to 14 days, the employee returns for one day of classroom review and lecture on various subjects of public



relations, equipment, operating procedure and other practices. After this final day the employee is assigned to a division.

At the present time there are approximately 265 motormen assigned to the Geary Division and out of that number there are about 50 who will accept new employees for line training. Out of this group of 50 the training staff considers only four or five as actually being competent instructors. This condition results in many new employees receiving instructions from employees not competent to train. As an example, on one field observation trip, the instructing motorman in the presence of his trainee on just one trip violated the following rules: (1) opening front gate before car stopped; (2) leaving position for proper operation while car in motion; (3) improper use of controls in starting and stopping; (4) engaging in "horse play" with the student.

Out of the group of approximately 215 motormen who will not accept students, the training department considers about 10 as being highly competent to train new students. The attitude of the operators seems to be one of complete disinterest in this part of the training program. The Charter provides that operators training students will receive a bonus of 20¢ per hour for the time spent with trainees.

During the war period, certain runs were designated as training runs which gave the Training Division an opportunity to assign regular experienced and competent operators to these runs, which operators were willing to cooperate in this phase of training. This policy was discontinued after the war due to pressure from the unions who contended the practice violated the established seniority policy.

The training program should be altered to include a system of organized and well-planned course of training supplemented by printed instruction material in lesson form or as a syllabus either to be given to the trainee for permanent use or at least to be retained during the entire period of training.

Written material in pamphlet form has a very beneficial effect and lends greater emphasis to the importance of the job the new employee is to do.

There should also be some system for checking each new employee by examination after he has completed his course of training and appropriate procedure should be established for a more positive record of performance during line training under supervision of regular operators.

One of the real defects of the present system is that the training authority is not under direct jurisdiction of the General Manager but under a separate Bureau of the Public Utilities Commission. This widely separated responsibility extending to two commissions in addition to the Railway creates confusion, overlapping authority and ineffective processing of employees.

There is no school of instruction, or training course conducted for training of equipment maintenance personnel. All instruction is done verbally by the supervisory force in direct charge of the respective employees or by assigning the new employee to work with an experienced employee.

Although actual work experience is necessary in maintenance and shop work to acquire the necessary knowledge and skill it is desirable to supplement this with courses of instruction from trained qualified instructors to improve to the maximum the knowledge and efficiency of the workmen.

Such instruction stimulates the more ambitious and conscientious employees and results in greater productivity and a higher grade of workmanship. It follows that better equipment performance and lower production costs may be obtained as a result. This plan also reduces the possibility of passing on bad work habits from one employee to another. The ever-changing design of modern rolling stock continually requires additional instruction regarding its servicing, inspection, adjustments and maintenance.

REVIEW OF FORMS

The number of forms used for internal operating procedure by the Railway is highly excessive. The General Manager approves all requests for new printed forms and in explanation stated that there were already too many forms in existence which created a burden of paper work. Each department and Section has free access to the duplicating unit and from a survey of the number of mimeograph forms in use, it is apparent that the control function over forms is not operating in the desired manner. The forms in use are printed, mimeographed, duplicated and dittoed and are of all shapes and sizes. Some have been carried over from the Market Street Railway and others were developed on Municipal Railway before consolidation. Because of the existing overlap of duties and responsibilities, it is necessary to prepare an excessive number of copies which over a period of time is costly not only in supplies but in the personnel required to prepare the data and to deliver the copies.

It is essential that a thorough study be made of every form now in existence and those not essential be abolished. Also a numbering system should be adopted which will include a key to indicate its departmental origin. A regular written procedure should be adopted to cover the subject of forms, including both adoption and discontinuance. A constant internal control of forms including number, distribution, and use will save the railway thousands of dollars yearly and in addition provide for an easier and more efficient flow of work between departments, sections and units.

CHAPTER XII

ACCIDENT AND DAMAGE CLAIMS

Detailed analysis has been made of the financial aspects of accident and damage claims, the causes of them, their disposition and the various phases of procedure followed in their handling. A number of tables have been included in the appendix to show conditions as found by inspection of the records.

It is inescapable that in a mass passenger transportation operation regardless of its location or the type of organization and management there will be a substantial percentage of gross revenue expended to cover the cost of accidents. This undesirable feature of the business in inherent to the character of operation and cannot be eliminated.

On the other hand there are ways and means of reducing the cost to a minimum through application of concerted effort based upon a thorough program of employee training, equipment modernization and maintenance and exercise of proper scheduling and supervisory control. In this business deficiencies in any branch of the service will be reflected in higher than normal accident and damage costs. By holding a tight rein on all phases of the operation that directly or indirectly contribute to the cost, is the most effective method of control.

Table No. XLV of the Appendix shows the trend of cost since 1928 to have been increasing in percentage of gross revenue during recent years to a peak for the entire period of 8.30 for the period from July 1, 1948 to March 1, 1949, whereas the trend of traffic has been down from a peak in 1944. This cost increase can be attributed in considerable measure to improper training, instruction, supervision and discipline.

PROVISION FOR ACCIDENTS

Analysis of the debits and credits to the accident reserve for the calendar year 1948, shows the following:

Accounts 92A and B - Personal Injury and Property Damage

Operation	Reserve Accruals	Claims Paid	Balance	Cost Per Vehicle Mile	Percent of Gross Revenue
Trolley Coach	$ 61,331.39	$ 52,850.21	$ 8,481.18	$ 0.0378	9.35
Motor Coach	485,922.61	331,570.50	154,352.11	0.0234	5.75
Cable Car	49,061.35	133,153.32	(84,091.97)*	0.3072	18.73
Street Car	921,378.97	812,376.26	109,002.71	0.0597	7.31
Sub-Total	$1,517,694.32	$1,329,950.29	$187,744.03	$0.0513	7.33
Less Acct. 92C-Claim Dept. Salaries and Expenses		308,746.50			
Acct. 92C-1-Excess Liability Ins.		58,852.30	367,598.80		
Deficit of reserve for calendar year 1948			$179,854.77		

The above excludes credit of $57,481.76 in March, 1948, due to collection of claim from insurance company.

Payments per vehicle mile for trolley coach and motor coach operation were not excessively high when compared with other properties. Street car costs are above

average and cable car claims are exceptionally high.

Passenger and damage claim costs by months from July, 1948 to and including January, 1949 by 251 accounts were as follows:

Month	Total	Personal Injuries 92-A	Property Damage 92-B	Misc. Expense 92-C
July	$ 166,130.57	157,898.25	6,800.78	1,431.54
August	96,501.91	84,845.48	9,954.48	1,701.95
September	83,987.26	67,471.90	8,015.33	8,500.03
October	157,942.46	146,612.60	7,374.27	3,955.59
November	141,374.90	124,513.55	12,658.15	4,203.20
December	70,381.20	58,567.67	7,306,39	4,507.14
January	61,810.17	48,819.62	7,947.65	5,042.90
	$778,128.47	688,729.07	60,057.05	29,342.35
Budget Allowance	566,719.74			
Over Expended	($211,408.73)			

$900,000.00 - Budget 1948-49
41,719.74 - Recovery from Insurance Carrier

$941,719.74

( ) Red Figure

CLAIMS DEPARTMENT

The organization chart shows the Claims Department to be directly under the control and supervision of the General Manager and staffed with the following personnel:

1 - General Claims Agent
2 - Senior Claims Investigator
15 - Claims Investigators
1 - Chief Clerk
13 - Clerical employees

One Senior Claims Investigator and three of the Claims Investigators are located at and receive instructions and work assignments from the City Attorney's office. The remainder of personnel is located at the General Offices of the Railway at 2600 Geary Boulevard. The office space allotted to this department is insufficient for efficient operation. One Senior Claims Investigator and ten Investigators have office and desk space in a room 15 by 20 feet. There are no cubicals available for conducting personal interviews with claimants. Office equipment is outdated and inadequate. Records which are confidential and permanent are literally stacked ceiling high. Because of existing walls and partitions in the floor layout, it is almost impossible to establish an efficient flow of work.

The Claims Department is assigned two automobiles, one of which is used almost exclusively by the Claims Agent, leaving one for the other seventeen investigators. Of these seventeen, ten use their own personal cars, and seven use the system transportation. Investigators are reimbursed at the rate of seven cents per mile, or the monetary maximum of fifty dollars monthly, for use of personal cars. It is estimated that an employee using his own car makes three investigation calls to each one by the employee using the system transportation. The Senior Investigator must consider the ownership or non-ownership of a personal car in making case assignments.

Rule 33 of the Official Rule Book pertains to accidents. A complete written report must be made of all accidents on or before the end of the run. Platform personnel involved in accidents are paid 15 minutes for making these reports.

In accidents involving personal injury, the platform employee describes orally the accidents to the dispatcher on duty who in turn records this information on a separate form and signs the report. All reported accidents at the end of the day, midnight, are picked up from the various division points and delivered to the Claims Department. This pickup and delivery is usually completed by 8 a.m. A clerk in the Claims Department prepares a case folder and classifies each individual accident, entering the totals to a monthly statistical chart. The individual cases are then turned over to the Senior Claims Investigator who reviews and makes case assignments to the investigators.

Accident reports pertaining to personal injury may or may not be turned in at the end of the run. The usual procedure in accidents of this type is for the operator or the inspector to immediately notify central control, and in turn central control promptly notifies the Senior Claims Investigator. This procedure allows the Claims Department to dispatch an investigator to the scene and make an immediate investigation of all the facts and incidents surrounding the accident. One investigator is available for 24-hour duty, such assignment being rotated among the investigators.

Section 87 of the City Charter provides that all claims for damages against the city and county must be presented to the Comptroller within sixty days after the occurrence on which it is claimed the damages have arisen. After claims are filed at the City Comptroller's Office, the Municipal Railway is notified of the claim which includes the name and address of the claimant, the date and place of occurrence or injury for which damages are claimed, and the nature and amount of the injuries or damages. If the prospective claimant reports to the main office of the Municipal Railway to file a claim, the paper work in connection with this filing will be done by the Claims Department, but the information must be forwarded to the Controller's office.

It is the policy of the General Claims Agent to pay claimants who have just and legitimate claims for damages or injuries and to make such settlement as quickly as possible. Claims up to and including one hundred dollars can be settled by the General Claims Agent, or his authorized representatives, a release obtained, and the check prepared and issued to the claimant. This procedure for settling claims up to and including one hundred dollars is included in a Public Utilities Commission Resolution No. 8140. The individual claim agents can obtain a release and make a settlement of a claim up to and including twenty-five dollars. For amounts from twenty-five to one hundred dollars, the claims investigators make a tentative agreement with the claimant and either check by phone with the Senior Claims Investigator or have the claimant report to the General Offices of the Municipal Railway to make the final agreement with the Senior Claims Investigator.

A procedure for the payment of non-litigated cases in amounts over $100.01 involves the following procedure.

Cases from $100.01 up to and including $500. both non-litigated and litigated, which are handled by the General Claims Agent are discussed with a Deputy City Attorney relative to evaluation. Cases involving amounts above $500. up to and including $5,000. both litigated and non-litigated, and which are being handled by the General Claims Agent, are discussed, for evaluation purposes with 5 Depty City Attorneys. A synopsis of the case is written up by the General Claims Agent in

which he gives all of the pertinent details of the accident, including the extent of injuries alleged to have been sustained by the claimant, also medical diagnosis of injuries, by attending physician, both for the claimant and for the railway, a list of Special Damages said to have accrued because of the accident, and finally, amount of claim filed against the Municipal Railway, amount of suit, if any, and the final demands of Counsel for the Claimant, or by the claimant himself.

The synopsis is submitted to the 5 Deputy City Attorneys, which facts they consider in their evaluation of the case. If the case exceeds $5000. after being evaluated by both the General Claims Agent and the 5 Deputy City Attorneys, it is further discussed with the Manager of the Railway and the Manager of the Utilities. If they both agree on the amount of settlement, the case is then submitted to the Public Utilities Commission for approval. All settlements exceeding the sum of $100. are submitted to the Public Utilities Commission for final approval, by Resolution, at the regular weekly meeting.

On Tuesday of each week, the cases approved at the Monday meeting of the Public Utilities Commission are returned to the Claims Department, and a request for warrant is prepared. The Claims Department attaches to the original and duplicate copies of the request for warrant a copy of the Public Utilities Commission Resolution and a properly signed and witnessed release form. This situation applies in cases of individuals and firms. If the claimant is a minor, it is also necessary to attach one copy of the petition and two copies of the Court Order Approving Compromise. In cases which are litigated, it is also necessary to have two copies of Dismissal of Prejudice. After the request for warrant has been typed and the above copies attached, it is signed by the General Claims Agent. The papers are also signed by the General Manager. The papers are then forwarded to the Bureau of Accounts, Public Utilities Commission, for an encumbrance against the claims appropriation. The file is then forwarded to the City Attorney's Office for Approval. After this approval, the file is forwarded to the Manager of Utilities for approval. It is then forwarded to the Comptroller's office, where the request is thoroughly audited and the warrant is actually prepared and mailed to the claimant. This procedure normally requires from three to five weeks.

CLAIMS PROCEDURE

After the Senior Claims Investigator has assigned an accident file to a Claims Investigator, all accident records of the previous day are processed by a claims investigator to determine whether or not the Railway should attempt to obtain payment for damages to equipment. In those cases where the outside party is at fault or to some degree negligent and Municipal Railway equipment is damaged, he will obtain the cost of repair from the Superintendent of Equipment if a street car or trolley coach, the Superintendent of Garages if a motor coach. After receiving this information as to the cost of repair, it is the usual practice for the Claims Department to await the expiration date of claim filing. The outside individual involved in the accident must, within sixty days, file a claim against the Municipal Railway, and by waiting this period the railway forestalls any counterclaim being filed. At the expiration of the 60-day filing period, a claim is presented to the individual involved, in the amount of the cost of repairing the Municipal Railway equipment. This request by the Claims Department for the cost of repair is the only existing cost accounting made pertaining to accidents. The procedure for costing accidents, other than these few requests made by the Claims Department, is different between the car houses and the bus garages. Whenever a street car is damaged in an accident, an estimate of car accident repairs is made up, signed by the foreman, and forwarded to the Superintendent of Equipment. This is not done in reference to buses. The actual cost of making the repairs, including the labor and the

materials, is charged to maintenance. To get a true picture of the entire cost of accidents, which will include payments made in settling claims and suits plus the cost of the personnel and operating expense of the Claims Department and the City Attorney's Office, it is necessary to obtain and record time and materials costs of each repair job chargeable to an accident. Such a costing should be charged to maintenance but included as a sub total or sub account.

The Claims Department assumes that Rule 51 of the Municipal Railway Official Rule Book is being administered properly. This rule prescribes the use of the defect card, F602. One of these cards is issued daily for each vehicle in service. The rule directs that each motorman, conductor and/or operator must report on the defect card any defects, mechanical or otherwise, however slight, on cars and coaches operated by them. If there are no defects, the card must be marked "Car or Coach O.K.". This rule is important and its proper administration will provide valuable records to the Claims Department in defending against certain types of accident claims.

Although the defect record card is issued daily, its usage by the operators is not in accordance with the rule. Many instances were found where no defect cards were turned in and on numerous cards that had been turned in, only one crew had signed the card, even though two or more crews had operated the car during the day. It has also been found that maintenance crews in checking a vehicle had found obvious defects, and yet no defect card had been turned in by the operator using the vehicle in its last trip.

For this system to function effectively it is desirable that the task of receiving defect cards be assigned to the clerk Receivers. In the event the operators fail to turn in a defect card, the clerk Receiver should notify the Division Superintendent who can take the necessary disciplinary action which should be uniform, and consequently, a disciplinary policy should be established for violation of this rule.

PERSONNEL DEPARTMENT - ACCIDENT PREVENTION SECTION

The Accident Prevention Section of the Bureau of Personnel and Safety, Public Utilities Commission is in charge of an Inspector with classification of S-111 and office title of Assistant Director of Safety. The section is located at the Potrero Division. The head of the section reports to and receives orders and instructions from the Director, Bureau of Personnel and Safety.

The General Manager, Municipal Railway has no direct control or supervision over this section although the personnel in the section are on the Municipal Railway budget. The inspector spends 100% of his time on accident prevention work which is normally an important aspect of management.

In addition to the Assistant Director of Safety, there are two other S-111 Inspectors assigned to this section and clerical help is provided by one of the two clerks allotted to the Director, Bureau of Personnel and Safety. One of the two Inspectors spends the majority of his time on statistical control and statistical evaluation pertaining to accidents, the other spends most of his time making special field followups on accident-prone employees.

There is maintained in this section a Master Personnel Accident Record Card on which every accident is posted to the appropriate employee. The cards are maintained alphabetically and certain type of employees or classifications are flagged for quick reference. These are Probationary employees, Accident-prone employees and Employees tending towards proneness but not yet considered in that category.

Since establishment of the Accident Prevention Committee, to be described below, the accidents are recorded as either chargeable or non-chargeable. Personnel of the Accident Prevention Section spend their entire time on accident prevention work pertaining to platform employees. Up to now statistics pertaining to accidents have been available only by a detailed review of records located in the Personnel Division, the Accident Prevention Section, the Claims Department, and the various Division Headquarters. At the present time a master tabulating card is in the process of being developed which will give a summary of information pertaining to types and kinds of accidents, the location, the cause and other necessary statistical data.

ACCIDENT PREVENTION COMMITTEE

This Committee was created November 5, 1948, by letter authority of the General Manager and comes under his direct supervision. The membership consists of:

1. Director, Bureau of Personnel and Safety, Public Utilities Commission.
2. Assistant Superintendent of Transportation.
3. General Claims Agent.
4. The President, or his authorized representative, of the A.F.L., Local 1307, Amalgamated Association of Street, Electric Railway and Motor Coach Employees of America.
5. The President, or his authorized representative, of the Municipal Carmen's Union, Local 250, C.I.O.

The duty and function of this Committee is to review the reports and records pertaining to all platform employees' accidents for the purpose of determining chargeability. Based on a majority vote of the Committee the accident is recorded on the employee's accident record card as either chargeable or non-chargeable.

The present procedure consumes about 7 hours a week of each of three key employees. There is considerable disagreement among the personnelas to the value of this Committee. It appears that the time spent to determine whether or not the accident is chargeable or non-chargeable is hardly justifiable. As the determination made by this committee usually follows the accident by about two weeks or more the disciplinary position of the Division Superintendent is placed in jeopardy. The day following an accident the Division Superintendent has interviewed the employee involved and has made some decision based upon the man's own report of the accident. The Division Superintendent's action is either a caution, a reprimand, a warning, further instruction, or suspension or dismissal in the case of flagrant violation of safety rules. On the day of the accident or on the day following, the Claims Department has started an investigation. There are no established lines of communication between the Claims Department and the Division Superintendent. If such lines existed the Claims Investigator could by telephone inform the Division Superintendent of his findings, thus assisting the Division Superintendent in making his decision.

The present system provides that the information developed by the Claims Department will be held and reviewed by the Accident Prevention Committee. In the event it is determined from a review of the record by the Committee that the employee involved in the accident falsified his statement, such information is then forwarded by formal letter from the General Claims Agent to the Superintendent of Transportation. In this case the Superintendent of Transportation will ascertain

the disciplinary action, if any, taken by the Division Superintendent. If no action was taken or in his judgement the action taken has not been severe enough, he will either personally discipline the employee or notify the Division Superintendent to take certain designated action. Again, if a direct line of communication existed between the Claims Department and the Division Superintendent, prompt action could be taken and a great deal of unnecessary clerical work could be eliminated.

PART FOUR

FINANCIAL ASPECTS AND FACILITIES

CHAPTER XIII

FINANCIAL ASPECTS

For purpose of establishing a common date to which all financial analysis should be related and in view of the fluctuating conditions resulting from the numerous changes currently being made in service, operations, routing and facilities, the month of October, 1948 has been selected for purpose of analyzing financial statements.

BALANCE SHEET

Balance Sheet Statement

Tables I and II are condensed balance sheet statements of the Municipal Railway as of October 31, 1948, showing assets and liabilities in accordance with the approved method of accounting used by the railway. The items shown on these tables are largely self-explanatory and follow generally the description of items found on conventional statements of this character. No detailed analysis has been made of those items of the balance sheet which are strictly contolled by ordinance or law or which represent fixed facilities or bond issues. The only items that have been given detailed consideration are those which fall within control of the administration of the Municipal Railway and over which they exercise freedom of manipulation.

The principal objective of this report goes to the greater issues of system-wide economy and service rather than to the myriad of details that ordinarily are a part of any properly constituted system.

Therefore, the features of the financial statements that have been considered of paramount importance in this analysis are those having to do directly with current earning conditions. Others are, of course, important and will be touched upon to some degree.

Surplus Account

Table III indicates the status of the Surplus Account as shown on the Balance Sheet as of October 31, 1948. It will be noted that of the total surplus up to June 30, 1948, in amount of $9,579,508.67, an amount of $4,146,899.81 was derived from sources other than earnings. Of that amount over one and one-half million dollars was derived from general taxes and in excess of $688,000 from the impounded fares of Market Street Railway Company. From July 1, to October 31, 1948, there were deductions from surplus of $1,073,292.99 of which $928,776.60 represented loss from railway operations.

Interfund Accounts Payable

Details of the "Interfund Accounts" item on the Balance Sheet, in total amount of $1,446,978.92, is given by Table IV. This statement is significant in that it shows the number of different departments with which the Municipal Railway is financially associated.

Intrafund Accounts

The item of $279,098.90 shown on the assets side of the balance sheet as Intrafund Accounts, represents $65,031.34 loaned from the Operating Fund purchase rails and other items for reconstruction and replacement. $7,896.73 represents amounts due the Operating Fund from Reconstruction and Replacement Fund for labor and

material used on replacement jobs during the fiscal years 1948 and 1949. An amount of $180,032.36 is payable to the Operating Fund from Reconstruction and Replacement Fund to cover a loan used for purchasing material. There is payable to the Operating Fund from the 1947 Municipal Railway Rehabilitation Bond Fund $20,043.81 for salaries and other expenses of the Utilities Engineering Bureau and $6,094.66 to cover materials used by the Bond Fund.

Reconstruction and Replacement Fund

An item of cash as a credit to this fund in amount of $375,296.61 is shown on the assets side of the balance sheet. Through intrafund exchanges there is $65,031.34 due this fund and $187,968.55 to other funds from the Reconstruction and Replacement Fund, which reduces the net balance as of October 1, 1948, to $252,359.40.

Accident Reserve Fund

The Accident Reserve Fund in amount of $2,320,295.26, shown under Deferred Credits as a liability on the Balance Sheet, is the unencumbered balance as of October 31, 1948. This amount is the net result of money placed in the fund over a period of years from May 1, 1926, to and including October 31, 1948, less all expenditures for injuries and damages charged against the fund.

Prior to May 1, 1926 an amount equal to 18% of the gross passenger revenue was set aside as a depreciation and accident fund and accident claims were paid from it. On May 1, 1926, a separate accident reserve was created by the transfer of $100,000 from the Depreciation and Accident Fund and the accrual of a percentage of the monthly passenger revenue or gross revenue. The percentages used were as follows:

May 1, 1926 to Oct. 31, 1929	-	2½% of passenger revenue	
Nov.1, 1929 to June 30, 1934	-	2½% of gross revenue	
Jul.1, 1934 to June 30, 1940	-	3 % of gross revenue	
Jul.1, 1940 to June 30, 1941	-	3 % of gross revenue plus	$ 30,000
Jul.1, 1941 to June 30, 1942	-	3 % of gross revenue plus	35,000
Jul.1, 1942 to June 30, 1943	-	3 % of gross revenue plus	15,000
Jul.1, 1943 to June 30, 1944	-	3 % of gross revenue plus	160,000
Jul.1, 1944 to June 30, 1945	-	3½% of gross revenue plus	60,000
Jul.1, 1945 to June 30, 1946	-	10 % of psgr. revenue plus	1,122,737
Jul.1, 1946 to June 30, 1947	-	10 % of psgr. revenue	
Jul.1, 1947 to present	-	7½% of psgr. revenue	

Total accruals to the accident reserve from May 1, 1926 to December 31, 1948, amounted to $9,779,085.22. Total expended for injuries and damages during the same period amounted to $7,497,928.59, leaving an unencumbered balance of $2,281,156.63.

INCOME STATEMENT

The income statement for the month of October, 1948, compared with the same month in 1947, is shown in condensed form by Table V. The items shown on this statement are described in greater detail in following sections of this report under the corresponding titles.

As previously stated, in view of the fact that this analysis is for the purpose of determining methods of improvement in operations, service and finances,

one month is sufficient for analysis as it is typical of what probably would be found in other months. Therefore, annual figures are not involved at this point. Certain of the important items relating to the income statement have been treated in considerable detail at other points in the report.

INCOME FROM OPERATIONS

Income from operations, i.e., profit from operations less provision for accidents and depreciation is equivalent to "Net Revenue (or Deficit) Railway Operations" in the ICC Classification of Accounts. The month of October showed a deficit of $199,941 and the 6-months' period ending December 31, 1948, a deficit of $1,419,457.

NON-OPERATING INCOME

Non-operating income consists of two items as follows:

(a) Interest on bank balances. The City Treasurer pays interest to the account of Municipal Railway computed on the average balances of the Railway held by him. The payments are made quarterly. For the 6-months' period ending December 31, 1948, interest amounted to $5,496.

(b) Other Income. This accrues principally from the sale of street cars, motor coaches, scrap material, etc. For the 6-months' period ending December 31, 1948, it amounted to $19,835.

The total non-operating income for October, 1948 was nil and for the 6-months' period ending December 31, 1948, it was $25,331.

GROSS INCOME

Gross income consists of income from operations plus non-operating income. For October, 1948, it amounted to a deficit of $199,941 and for the 6-months' period ending December 31, 1948, it amounted to a deficit of $1,394,127.

DEDUCTIONS FROM GROSS INCOME

Deductions from Gross Income consist of two items as follows:

(a) Interest on Funded Debt. This item consists of interest paid on outstanding bonds. This amounted to $7,182 in October, 1948, and $42,674 for the 6-months' period ending December 31, 1948. The distribution of the latter amount between bond issues was as follows:

1913 Bond Issue	$12,083.34
Market Street Refinancing, 1947	12,147.21
1947 Municipal Bonds	18,443.45
Total:	$42,674.00

(b) Taxes. This item consists of ad-valorem taxes paid on property in San Mateo County owned by Municipal Railway. It amounted to $1,417 in October, 1948, and $10,580 for the 6-months' period ending December 31, 1948.

Total deductions from income amounted to $8,598 for the month of October, 1948 and to $53,264 for the 6-months' period ending December 31, 1948.

NET INCOME

Net Income is gross income less deductions from gross income. For the month of October, 1948, it amounted to a deficit of $208,540 and for the 6-months' period ending December 31, 1948, it amounted to a deficit of $1,447,381.

NET PROFIT FROM OPERATIONS

Net profit from operations, i.e., Operating Revenue less Operating Expenses, but before accrual of accident and depreciation reserves, amounted to $28,144 for the month of October, but a deficit of $67,653 for the 6-months' period ending December 31, 1948.

DEPRECIATION

Section 128 of the Charter provides that the Public Utilities Commission make appraisals of the properties of utilities under their direction. The purpose of this is to determine the value of the properties, the accrued depreciation, and a reasonable annual depreciation to be accrued. The first appraisal was made for the fiscal year 1937-38 and provision was made for revised appraisals to be made at 5-year intervals. At the time the properties of Market Street Railway were taken over the appraisal indicated that the value of the facilities was 27.674% in excess of the purchase cost.

The appraised value was set up on the books of Municipal Railway together with accrued depreciation and the excess of appraisal over purchase cost is treated as a deduction from the total value of Road and Equipment less accrued depreciation. This amount is being amortized by deducting 27.674% of the annual depreciaton of appraised value of the Market Street properties.

The annual depreciation of the Market Street properties for 1948-49 amounted to $702,786.90 of which 27.674%, or $194,489.25, represents the reduction of excess of appraised valuation over purchase cost; the balance, or 508,297.65 is considered as normal depreciation for income statement purposes.

Separate schedules are prepared annually as of June 30th, for both the former Market Street Railway property and the former Municipal Railway. These show by ICC Road and Equipment accounts, the cost as of June 30th, depreciable cost, accrued depreciation to June 30th, and annual depreciation. There is a further subdivision between electric street car, cable car, motor coach and trolley coach operations.

The annual and monthly depreciation for the current fiscal year by operating type is as follows:

Type of Operation	Depreciation Annual	Monthly
Electric Street Car	$690,749.42	$57,562.45
Cable Car	17,194.82	1,432.90
Motor Coach	586,148.65	48,845.72
Trolley Coach	75,052.93	6,254.41
	$1,369,145.82	$114,095.48

OPERATING REVENUE

Although the accounts in their detailed state provide for a variety of funds, transfers, reserves and other accounting terminology due to theform of accounting

and control required in a city operation, the real measure of the property's financial worth is gained from an analysis of the items appearing on the standard form of income statement. That statement shows the amount of money earned and the amount of money spent, the difference between which is an indication of the net earning ability of the property. Every effort must be exerted to capture the greatest possible amount of revenue and to expend the minimum funds in so doing. By far the greater amount of this report is devoted to matters of service, operations, organization and facilities. However, all of those elements are directly related to the real objective of the entire enterprise which is to earn sufficient revenue to offset cost of operations.

For the month of October, 1948, total operating revenue amounted to $1,532,656.68. In order to produce that amount of revenue $1,741,196.60 was spent. It shall be the endeavor of this report to devise methods by which the balance between revenue and operating expenses can be readjusted so as to produce a profit rather than a deficit.

Although the income statement as prepared by the railway shows passenger revenue in amount of $1,519,869.33 and advertising revenue in amount of $11,410.23 with miscellaneous items totaling $1,377.12, the detailed operating statements show the entire amount of operating revenue as having been derived from the following sources, as indicated on Table XVII.

Advertising revenue is earned on the basis of a contract with a local advertising agency on the basis that the agency pays to the railway 40 percent of gross revenue collected from its customers.

The item of miscellaneous revenue is largely made up of items received to cover damages to railway property, principally equipment, damaged in collisions collectible from the other party.

Revenue earned by individual lines has been tabulated in the appendix for the month of October, 1948, tying into the total shown on the income statement.

PASSENGER REVENUE

The present fare structure of the Municipal Railway consists of -

10¢ - Cash Fare

5¢ - School fare in the form of a ten-ride punch ticket

10¢ - Tickets sold to government agencies and other large organizations.

Transfers are free and are also exchanged with California Street Cable Railroad Company at a number of intersecting points, the total volume for the year 1948 amounting to about 1.4% of the total transfers lifted.

Prior to January 26, 1949 tokens were sold at 3 for 25 cents and the cash fare was 10¢. Although they were officially discontinued on that date, tokens outstanding were accepted for fare until March 15, 1949.

All cash and token fares collected are registered on mechanical registers. School fares consisting of ten-ride tickets are punched for nine rides and lifted

and control required in a city operation, the real measure of the property's financial worth is gained from an analysis of the items appearing on the standard form of income statement. That statement shows the amount of money earned and the amount of money spent, the difference between which is an indication of the net earning ability of the property. Every effort must be exerted to capture the greatest possible amount of revenue and to expend the minimum funds in so doing. By far the greater amount of this report is devoted to matters of service, operations, organization and facilities. However, all of those elements are directly related to the real objective of the entire enterprise which is to earn sufficient revenue to offset cost of operations.

For the month of October, 1948, total operating revenue amounted to $1,532,656.68. In order to produce that amount of revenue $1,741,196.60 was spent. It shall be the endeavor of this report to devise methods by which the balance between revenue and operating expenses can be readjusted so as to produce a profit rather than a deficit.

Although the income statement as prepared by the railway shows passenger revenue in amount of $1,519,869.33 and advertising revenue in amount of $11,410.23 with miscellaneous items totaling $1,377.12, the detailed operating statements show the entire amount of operating revenue as having been derived from the following sources, as indicated on Table XVII.

Advertising revenue is earned on the basis of a contract with a local advertising agency on the basis that the agency pays to the railway 40 percent of gross revenue collected from its customers.

The item of miscellaneous revenue is largely made up of items received to cover damages to railway property, principally equipment, damaged in collisions collectible from the other party.

Revenue earned by individual lines has been tabulated in the appendix for the month of October, 1948, tying into the total shown on the income statement.

PASSENGER REVENUE

The present fare structure of the Municipal Railway consists of -

10¢ - Cash Fare

5¢ - School fare in the form of a ten-ride punch ticket

10¢ - Tickets sold to government agencies and other large organizations.

Transfers are free and are also exchanged with California Street Cable Railroad Company at a number of intersecting points, the total volume for the year 1948 amounting to about 1.4% of the total transfers lifted.

Prior to January 26, 1949 tokens were sold at 3 for 25 cents and the cash fare was 10¢. Although they were officially discontinued on that date, tokens outstanding were accepted for fare until March 15, 1949.

All cash and token fares collected are registered on mechanical registers. School fares consisting of ten-ride tickets are punched for nine rides and lifted

on the tenth by the conductor and turned in. The 10¢ tickets are lifted, punched and turned in together with cash, tokens, cancelled school tickets and transfers.

The registering equipment of the Railway consists of the following:

(a) 942 Johnson Type D fare boxes, equipped to receive dimes or tokens which are registered by the mechanism of the fare box. Of the 942 Johnson fare boxes, 614 are power operated.

(b) 50 New Haven fare registers for cable car operation. These are a square faced type of register, equipped with two dials. The registering mechanism is actuated by pull cords.

(c) 260 International portable registers for use of street collectors, each collector using two registers (prior to discontinuance of tokens) one for tokens and one for cash fares. These registers are rented from the International Register Co., 110 at 25 cents per month and 150 at 75 cents per month.

The fare registers are numbered serially and daily records are kept of each in the General Accounting Office. A daily fare box register report which is a card with spaces to indicate Data, Fare box number, car number, Name of operator, Cap number, Line run number and On and Off readings for four runs. At the various divisions a fare box register report is made out for each fare box housed at the division. The cards are usually handled by the Night Receiver, who enters the closing readings in the space on the card provided for it. He picks up the card left by the operator who returned the fare box to its rack and enters the closing readings for the day. The fare register report cards are forwarded to the Accounting Department where the opening readings are compared with the previous day's cards and any discrepancies are noted and are traced back to the person making the error.

Conductors and operators are required to fill out conductors Day Cards, showing Line, Date, Run No., Names and cap numbers of crew, Car no., Number of Trips, Transfers lifted, School cards lifted, Tickets lifted, Transfers Issued, Fare box number, Opening and closing readings of fare dials, and detail of turn-in. These conductors Day Cards are turned in to the Receiver, together with the fares collected during the day.

The fares and tokens turned in are counted in the presence of the conductor. If the turn-in is in order and checks with the trip card, the card is signed by the Receiver. Receivers summarize conductors Trip Cards by line on form provided, and fills out Receivers Daily Statement of Cash and Tokens. Conductors Trip reports, Summary of trip reports, and the Daily statement of cash and tokens are forwarded to the Accounting Department.

Cash and tokens turned in are sacked and are picked up by the money wagon and are deposited in the money room, together with copy of Receivers Daily Statement of cash and tokens. The turn-ins are recounted in the money room and Receivers daily report verified or discrepancy noted. The cash is sacked and deposited in the Federal Reserve Bank where check is issued which is then delivered to the City Treasurer. Treasurer issues cash tag in receipt for Federal Reserve check. Copy of cash tag is delivered to the Controller and copy to the Accounting Department. Currency and odd lots of cash, not sent to the Federal Reserve Bank, are delivered to the Treasurer, who issues cash tags. Accounting Department audits fare register reports by verifying opening reading with previous days cards and checking computations. All discrepancies are traced to person making error who is charged with the shortage or credited with the overage.

Conductors trip cards audited by checking dial readings against Fare Box Report and Receivers summary of trip cards and all computations are checked. Any discrepancies are charged against operator making error and are listed on Short List. Short lists are compiled for each division and copies are sent to them.

Money room counts of cash and tokens are entered on Control Sheet and receivers daily reports checked. Any discrepancies are charged against the Receivers. The control sheet also reconciles the division token account.

The revenue Accounting day closes with the turn-in of the last night runs (about 3 A.M.) not including Owl runs which turn in on the succeeding day. The Revenue Accounting system seems to be well designed and to provide an adequate control and the work is done with considerable dispatch. The accounting of one day's receipts by lines is completed by about 3 P.M. the succeeding day. A preliminary statement of receipts for any day is available to the General Manager by 8:30 A.M. on the succeeding morning.

PASSENGER TRAFFIC

Passenger traffic from which operating revenue is derived was for the month of October, 1948, as shown in the following tabulation, segregated between the four classes of service.

SYSTEM PASSENGER TRAFFIC - OCTOBER, 1948

	Street Cars (1)	Cable Cars (2)	Trolley Coaches (3)	Motor Coaches (4)	Total (5)
Number of Cash Fares	1,516,987	123,282	99,618	943,497	2,683,384
Registered Token	7,578,613	431,032	628,455	5,880,497	14,518,597
Total Cash & Token	9,095,600	554,314	728,073	6,823,994	17,201,981
Percent	52.9	3.2	4.2	39.7	100.0
Postal Employees	42,712	894	2,406	16,488	62,500
Chartered Coach Psgrs.	-	-	-	50,143	50,143
Excursion Tickets	2,064	-	-	-	2,064
School Tickets	596,992	35,009	48,678	429,673	1,110,352
Cal.St.Cable Transfers	45,651	22,541	5,910	36,252	110,354
Local Transfers	3,316,097	277,320	291,397	3,918,480	7,803,294
TOTAL PASSENGERS	13,099,116	890,078	1,076,464	11,275,030	26,340,688
	49.7	3.4	4.1	42.8	100.0

Further detail of the traffic characteristics by lines will be found tabulated in the appendix. Various operating revenue statistics by lines are also tabulated in the appendix.

Average daily receipts by classes of operators are as follows for the month of October, 1948:

AVERAGE DAILY RECEIPTS

Type of Service	Week Day	Saturday	Sunday and Holiday	Monthly Average Daily
Street Car	$28,658	$24,244	$11,969	$25,251
Cable Car	1,632	1,790	990	1,553
Motor Coach	20,312	17,799	13,540	18,814
Trolley Coach	2,328	1,597	1,076	2,008
SYSTEM	$52,930	$45,430	$27,575	$47,626

For the years 1945 to and including 1948, average daily passenger receipts and monthly fare passengers were as follows:

DAILY AVERAGE PASSENGER RECEIPTS

Month	1949	1948	1947	1946	1945
January	$46,855	$48,387	$50,506	$45,174	$46,004
February	52,070	46,888	51,700	44,723	47,649
March		49,654	51,316	46,116	48,385
April		48,733	53,000	47,333	48,455
May		47,496	50,987	49,831	49,476
June		49,897	49,688	55,874	51,137
July		47,467	50,106	52,153	48,526
August		48,185	50,137	52,769	47,850
September		48,944	50,867	52,876	46,542
October		48,795	51,376	54,747	48,274
November		47,975	49,183	52,253	46,010
December		47,915	50,407	52,110	44,409

FARE PASSENGERS BY MONTHS

Month	1945	1946	1947	1948
January	27,350,676	26,847,737	26,361,459	25,389,792
February	25,612,851	25,048,883	24,446,220	23,083,468
March	28,713,547	28,287,421	27,077,707	26,465,300
April	27,765,739	28,059,982	27,170,431	25,459,178
May	29,338,051	28,121,979	26,979,963	25,774,207
June	29,021,387	26,099,352	25,427,605	25,626,168
July	28,514,490	23,724,119	26,103,496	24,880,336
August	28,166,496	26,474,351	26,013,654	25,212,882
September	26,711,976	25,893,164	25,683,552	25,165,523
October	28,616,758	28,180,954	27,052,819	26,290,545
November	26,490,767	26,029,892	24,959,084	24,931,617
December	25,964,633	26,725,289	26,125,421	25,256,779

VEHICLE HOURS AND AVERAGE SPEED

Vehicle hours as shown on various statements for accounting purposes are taken from schedule summaries and are not actual to the extent that they include report time, relief allowance and travel time. Actual hours are about 95% of those used by the Accounting Department. System average speed is 8.9 for street cars,

5.4 for cable cars, 9.3 for motor coaches and 9.1 for trolley coaches, based upon January, of 1949.

Vehicle hours by types of operation for the month of November in 1944, and 1948, were as follows:

CAR AND COACH HOURS - SYSTEM

	Street Cars	Cable Cars	Trolley Coaches	Motor Coaches	System Total
November, 1948	108,965	6,703	12,478	140,573	268,719
November, 1944	185,664	4,115	6,043	52,290	248,112
Increase or Decrease	(76,699)	2,588	6,435	88,283	20,607
Percentage Increase	(41.31%)	62.89%	106.49%	168.83%	8.31%

( ) Red Figures.

ACCOUNTING AND AUDITING DEPARTMENT

The Auditing and Accounting Department is under the direct control and supervision of the Bureau of Accounts, Public Utility Commission. In actual practice the control and responsibility for this Department is divided. The Senior Accountant in charge receives orders and instructions from the General Manager of Municipal Railway, and also from the Assistant Director and Director of the Bureau of Accounts, of the Public Utilities Commission. The department is located at 2600 Geary Boulevard, the Assistant Director of Bureau of Accounts is located at 425 Mason and the Director of the Bureau of Accounts is located at the City Hall. According to the existing organizational chart, this department is divided into six sections - namely, Accounting, Auditing, Receiving, Timekeeping, Telephone Switchboard, and Lost Property. In actual practice the department is divided into five sections including Accounting, Revenues, Stores, Timekeeping and Tabulating. Under this setup the telephone switchboard and Lost Property sections are units within the control of the revenue section. Although this chart is dated February 14, 1948, it fails to follow the pattern of the existing official chart in that it shows the Bureau of Accounts reporting direct to the General Manager.

The function of reproduction of material other than by printing or photostat is placed under the Accounting and Auditing Department. In actual practice this responsibility is limited to the machines and equipment. When a department desires mimeographing or duplicating work performed, one of the employees from the department is sent to the duplicating room at Geary Division to perform the work. This means that the machines are operated by many employees, none of whom are proficient at machine operation. There is no check whatsoever on the using department and there is no policy providing for usage of the machines, control over the number of copies, and little attention is paid to the maintenance of the equipment. In fact, on two separate dates once at 10:30 P.M. and the other at 3:30 A.M. the duplicating room was not locked. With no effort either equipment or supplies could be removed without dectection.

The practice in almost all efficiently operated organizations is to establish a central mimeographing and duplicating service, staffed with employees who are technically qualified to perform fast, accurate and neat work. Furthermore, the employee charged with the responsibility for this service, has the authority to question the number of copies requested. Such a system would provide better service, a higher degree of efficiency in the work performed, a longer operating life for

the equipment, a great saving in paper and supplies and the prevention of unnecessary duplicating work, and should be established.

The central mail room is the responsibility of the Accounting and Auditing Department. Primarily, this service provides for inter-departmental mail pick-up and delivery with two deliveries and pick-ups at each location daily. Incoming U. S. Mail is delivered to the department or individual to which addressed. Mail addressed to the Municipal Railway is opened and delivered to the appropriate department. Outgoing U. S. Mail is mailed by the department originating the correspondence and postage stamps are issued to the various departments upon request by the Revenue Section.

Outgoing mail should be picked up by the same messenger personnel as utilized in delivery mail. Under the existing procedure, individuals from the various departments make numerous trips daily from the 3rd floor, 2600 Geary to the U. S. Mail box located in front of the building.

Accounting Section

The Accounting Section is responsible for all proprietary accounting, including the general and subsidiary ledgers, initial clerical work reference funding, and maintenance of the detail plant and equipment registers. A unit under the control and supervision of the Accounting Section is called the Accouning Funding Unit. This unit enters all transactions respecting funds and appropriations and makes all approved encumbrances. This unit also maintains a bond fund book. The Accountant who handles and is responsible for the bond fund book is located at 425 Mason Street.

The second unit under this section is titled Statistics. This unit is detailed the job of preparing individual cost statements, gathering and collecting data with reference to gasoline mileage and other accounting statistical records as required.

The bond fund accounting should be transferred from 425 Mason Street to the Accounting and Auditing Department at the Railway general offices at 2600 Geary Boulevard and the duties pertaining to this function should be absorbed by present personnel within the Accounting Section. Consideration should also be given to transferring the present statistics to the Tabulation Section.

Accounting Revenues

The Accounting Revenue Section is located at 2600 Geary Boulevard and is supervised by a Head Clerk. This section performs the function of auditing all trip sheets, makes details of all cash records, prepares over and short lists, and handles other miscellaneous revenues.

On March 1, 1947 a rental agreement was made with the Remington Rand Company for rental of tabulating equipment for machine procedure of revenue accounting. This new system was first used on June 13, 1947, and was discontinued on September 30, 1947. The reasons for the discontinuance of the procedure were due to inability to obtain technically qualified personnel as operators, and inability to properly train the platform personnel to turn in daily trip records without errors.

A unit under control and supervision of the Revenue Section is that of Receiving. There are at the present time 31 employees assigned to the various car houses and garages for the purpose of receiving revenue turn-ins from the operating personnel.

The number assigned to each location is as follows:

Washington and Mason	1	Potrero	3½
Geary	5½	McAllister	3
Sutro	2	24th and Utah	6
Geneva-Ocean	10		

Of the total four are classified as Inspectors. Relief for this group is handled by temporary special duty conductors and motormen. There are Receivers on duty at each location 24 hours a day, seven days a week but there is no uniformity as to number of Receivers assigned to each location. When the physical location permits, or because of a low volume of work, dispatchers are assigned the additional duty of receiving revenues, however, there is no set policy on this usage.

The four S-111 Inspectors assigned full-time duties as car house Receivers should be transferred to work within their classification and the number of Dispatchers assigned to each location should be restricted to one for each shift and as additional work requires, the positions should be filled with Clerks. When practicable the car house Receivers who are also Clerks should be assigned during the off peak periods to clerical duties in the Dispatch office.

Under the present plan the car house Receivers, although assigned to the Accounting Revenue Section for payroll and cost purposes, are under the control and jurisdiction of the Division Superintendent. A carefully planned and designed Dispatch Office which would provide sufficient space for dispatch duties, as well as receiving duties, would allow for a closer cooperation and coordination of work between the Dispatch Office and the car house Receiving office, the result being fewer personnel required to perform the two duties.

Arrangements should be made so that money at the various division points which has already been counted by the Receivers, be picked up directly by bank messenger service. This would permit complete elimination of the money room unit at Geary Division, at a saving of twelve employees and one truck. Inasmuch as the Revenue Section audits the platform employees trip tickets, an internal check over the reports turned in by the receivers would exist.

Stores and Stores Accounting Section:

In the stores unit, which includes receipts and issuances at the various locations, there are 11 Storekeepers of class B-352 and 3 General Storekeepers of class B-354. Due to the provisions of the City Charter, these employees are on the payroll of the City Purchaser and the Railway makes a transfer of funds on a work order basis to cover salaries. The Purchasing Department by Charter provision was given the responsibility for operation of Central Stores and Warehouses. Under this situation the Municipal Railway has neither the control of the personnel operating the stores, nor does it have control and responsibility of the management of the stores. This does not permit the degree of freedom required by the Railway.

The City Charter should be amended to allow the Railway full authority and responsibility for the operation of Central Stores and Warehouses.

Payrolls and Timekeeping:

The Payroll and Timekeeping Section is under the control and supervision of a Head Clerk of class B-234. Time rolls are prepared bi-monthly on forms received from the City Controller including the names of employees assigned to the

Railway. It is the duty and responsibility of this section to show the hours worked per day per employee or the proper symbol for absence. The only time clocks used are located at the 24th and Utah Garage and the McAllister Garage. Monthly employees are reported daily by their Section Department Head.

Department Heads should sign daily attendance records for monthly employees and time clocks should be installed at all car houses and garages. A system and procedure should be adopted for the preparation of payrolls by the Tabulating Section, utilizing the available tabulating equipment.

Tabulating Section:

The tabulating section is under the control and supervision of a B-310.1A Senior Tabulating Machine Operator, Remington Rand. This section uses tabulating equipment at a monthly rental of $870.00.

Now that it is possible to obtain personnel qualified to operate this type of equipment, it is recommended that a detailed study be made by the representatives of the Remington Rand Company in conjunction with the Senior Accountant in charge of the Accounting and Auditing Departments to determine the present and contemplated accounting and statistical functions which can better be handled by machine accounting than by the manual method. Certain functions, if set up on the tabulating equipment would permit a saving in personnel. These functions would include Equipment and plant accounting, Payroll preparation, A master personnel card and Additional material and stores accounting.

There is also located in the Accounting and Auditing Department a clerical and stenographic pool with 13 positions assigned to the unit. The Personnel of this pool are utilized by all the sections of the Department as work requires. The mail and messenger service personnel are included in this unit. The mail and messenger service should be set up with detailed duties and responsibilities and this unit assigned to report directly to the Senior Accountant.

Covered in another section of the report is a writeup of the mimeograph and duplicating function. This function does not exist as an organization unit in the present organization, but is assigned to the Accounting and Auditing Department.

The telephone switchboard, which is now assigned to the Revenue Section should be transferred to a unit under the Public Relations Section and the Lost Property Unit, now assigned to the Revenue Section, and located at the Potrero car house should be transferred to the Public Relations Section.

FARE AND TRANSFER HISTORY

Transfer Interchange with California Street Cable Railroad

December 1, 1942	-	Mutual interchange between all lines of California Street Cable RR.
August 8, 1943	-	Interchange discontinued.
October 15, 1944	-	Free interchange when California Street Cable RR fare increased to 7 cents.

FARES

December 28, 1912	-	Fare 5 cents cash.
September 29, 1944	-	Increased to 7 cents.
May 20, 1946	-	Increased to 10 cents cash or 3/25¢ tokens.
January 26, 1949	-	Token sale discontinued.
March 16, 1949	-	Use of tokens discontinued.

FARE INCREASE

The Public Utilities Commission by resolution approved an increase in the railway fare structure to a straight 10 cent fare, eliminating the 8-1/3 cent token rate, an increase in the charge for school ticket rides from 3-1/8 cents to5 cents, an increase in the fare on the No. 40 San Mateo line from 25 cents to 30 cents, and an increase in chartered car and coach rates. The increased fares went into effect on January 26, 1949. It was contended at the time of consideration that it might require as much as a 12 cent fare to fully provide funds for all the railway's cost of operation and bond service charges.

It is estimated by this analysis that the fare increase will result in increased annual revenue to the amount of approximately $2,150,000. There should be no necessity for further increase in fares unless radical change in traffic and costs is experienced.

TRANSFERS AND FREE PASSES

Transfer Abuses

One feature of mass transportation, that is as old as the industry itself, is the use of transfers to provide passengers the privilege of using more than one line in carrying out their trip. Almost as long as transfers have been in use, there has also been abuse of the privilege. It is the most difficult of the features of the fare structure to control. On small systems in medium sized cities, where the number of lines are not great and their arrangment is more or less on a basis of rectangular co-ordinates, the problem is not so difficult as it is in larger cities where there are many lines and the routes and streets are not parallel.

The arrangement of the street layout in San Francisco, particularly the downtown area, not only makes it impossible to design the ideal system of traffic control and transit line arrangement, but it also complicates materially the transfer problem. Free transfers normally are only valid in providing a continuation of an individual trip in the same general direction. It is not the purpose of a transfer to permit stopovers or to allow for doubling back in the direction from which the passenger originated. Each operating company usually has its own particular design of transfer, and there is a considerable variety of methods used for identification purposes and recording them by routes. Without question, there is abuse of transfers on every system that uses them. Much can be gained, however, by exercising the fullest amount of control within practical limits to prevent the loss of revenue that results from abuse of transfers.

Lack of Transfer Control

On the Municipal Railway of San Francisco, considerable time has been spent on the analyzing of transfer turn-ins and field observation and office analysis indicate conclusively there is a great amount of revenue otherwise due the

system, that is lost through improper use of transfers. Instances have been observed where operators have deliberately crushed the transfers when received and thrown them from the window or into a heap on the floor of the vehicle, there being absolutely no indication of a desire of systematically collecting them for turn-in purposes. A great many individual trips have been taken during the survey, for which cash fares were paid and transfers requested. In checking the time validation, it ranges from one-half hour to two hours, with in some instances, the time being even greater. Very few were collected with a time limitation of less than one hour.

Although operators are requested to collect and turn in their transfers received from other lines, the procedure is extremely lax, and a large percentage of transfers never reach the turn-in window. A typical example of the validation of this rule is the accumulation of transfers in the niches of the Twin Peaks Tunnel, particularly on the western end. On one inspection trip a large cardboard carton was observed partially filled with rubbish that had been collected through the tunnel. Most of its contents consisted of transfers, packets and envelopes that apparently had been tossed out of the cars by the conductors, while in the tunnel. There were not only isolated packets, there were many. Analysis of procedure at operating headquarters indicates a definite lack of interest in the transfer situation, similar to that displayed by the operators. No appreciable recording is made, and no analysis is conducted at periodical intervals to determine the nature of use of transfers on the various lines of the system.

As an indication of the importance of transfers, for the calendar year of 1948, there were 202,385,000 cash and token fares, and 91,536,000 transfers collected, being 45.3% of total cash fares. If 10% of the transfers were improperly used, it would represent $910,000 annually in lost revenue. Based upon the observations made in this survey, it is reasonable to assume that the ninety-one and one-half million transfers actually recorded fell far short of the number actually issued and used, due to the laxity on the part of operators. An indication of the tendency in this regard is demonstrated by a statement prepared by the Accounting Department of the Railway, showing cash transfer and other collections for the system on a monthly basis. By some means a check was made of the number of transfers turned in as having been honored on Municipal Railway lines for passengers originating on lines of the California Street Railway. It appeared from the check that turn-ins were not showing the true condition, and a bulletin was issued, cautioning operators to take greater care. Almost immediately, there was a material increase in the number of transfers turned in by operators which was definite proof that they had not theretofore been collecting and turning in the full quantity. To estimate, with any degree of accuracy, the amount of increased revenue that could be derived from closer control of transfers would require a carefully planned and detailed analysis of transfers issued and collected by lines. Due to the large number of transfers involved, this is ordinarily considered to be too large a project. If, on the other hand, it was a matter involving potential loss in cash fares or tokens, unlimited time would be devoted to run down the deficiencies.

Indifference of Operators to Transfers

The failure, on the average, of operators to recognize the importance of transfers can be attributed to the failure of Management and Supervision to properly instruct them and to follow up for the purpose of determining the extent of compliance. Indifference on behalf of Management is naturally reflected in the activities of operators.

There should be a vigorous campaign launched to impress upon all personnel having to do with fare collections the extreme importance of eliminating abuse of

transfers. This program of training should extend not only to the operators but to the cashiers, supervisors and division superintendents. The transfer is almost universally looked upon as a nuisance with no value. An example of the laxity of operators is exemplified by one instance observed where a lady passenger boarding Powell Street cable line, upon paying her fare and asking for a transfer requested that the conductor punch it for an hour longer than ordinary to permit her to stop off and do some shopping. The conductor obligingly did so.

Complete Control Impossible

Due to the nature of the transfer with its many items of printing, as to time, dates, lines, and other data, it is an extremely awkward element of fare and causes collecting conductors more difficulty than probably any other element of his duties, particularly during the hours of peak traffic in the mornings and in the evenings, where large numbers of passengers are picked up at heavy points. It is difficult to scrutinize each individual transfer, due to the rapidity with which they are handed to him. In numerous cases the passengers deliberately attempt to confuse the conductor by folding the transfer into a small packet, and in other instances wadding them up into a ball. Cases have actually been observed, where boarding passengers, becoming impatient at the slowness of fare collecting by the conductor, throw their transfers on to the floor or ram them into the fare box.

The fault is, indeed, not entirely that of the operators, in connection with the misuse of transfers. Numerous instances were checked, where conscientious conductors in questioning passengers with respect to transfers, which were obviously improper were turned in by the passenger and received reprimand for their efforts. Lack of support from higher authority in such instances tends to break down the morale and to promote the mis-practices.

The Effect of Charge for Transfer

The only method by which transfer misuse and loss of revenue through the practice can be completely eliminated is to eliminate the transfer and make a charge in each instance for each trip a passenger takes regardless of its length. This procedure is practiced on a number of carriers throughout the country. It is, of course, one that is opposed by the travelling public, a turnover percentage of which is adversely affected and penalized by reason of the mis-practices of the minority. The subject is one, however, that is definitely worth-while investigating and putting into effect, if analyses indicate its desirability in the absence of any other effective means of control.

Free Passes

There are currently in use approximately 4,723 free passes on the Municipal Railway, classified as follows:

1. Municipal Railway employees - 3,600
2. Municipal Railway retired employees - 375
3. Blind persons - 453
4. Employees of California Street Cable RR Company - 145
5. Other - 150

This large number of passes creates another real source of revenue loss. With so many passes in the hands of riders, an attitude of indifference has developed on behalf of conductors similar to their attitude toward transfers. They do not carefully check passes that are presented to them for passage.

CHAPTER XIV

OPERATING EXPENSES

For accounting purposes Municipal Railway has adopted the Uniform Classification of Accounts as prescribed by the Interstate Commerce Commission and the Public Utilities Commission of the State of California for application to street railway and motor coach operations. Current costs incurred from operations are segregated into the various classifications and charged to individual accounts and subaccounts. Titles of the accounts are generally descriptive of the nature of the cost incurred and a continuous balance is maintained at all times.

In carrying out the processes of accounting the current expenditures and obligations are recorded in fact. In other words, the accounting office records the amounts actually involved in the various transactions as reported to it by the spending divisions of the railway. The accounting office does not exercise control over the source and nature of charges, but only assumes responsibility for accuracy of items and appropriate allocation to accounts. This is according to normally accepted practice. Accounting processes are checked periodically by certified public accounting agencies in addition to internal checks and balances within the city organization.

Control of expenditures is the responsibility of the various functional departments of the railway and it is not the duty of the accounting organization to pass judgment upon the managerial discretion exercised in control of expenditures, so long as they do not exceed the appropriations available.

In this chapter the results of analysis of operating expenses as reflected by the accounting records are briefly set forth. Analysis of the various functional processes by which the amounts were created is discussed in other chapters of the report. It is the purpose of this analysis to indicate the relationship between the various costs incurred as recorded in the accounts.

Analysis of operating expenses shows that nearly 60% of the total is included in the "Conducting Transportation" group of accounts. This group includes the cost of wages of conductors, motormen and coach operators.

Distribution between major groups of accounts for the six-months' period ending December 31, 1948, was as follows:

Accounting Group	Amount 6 Mo. Ending 12/31/48 (1)	Percent of Operating Expense (2)	Percent of Total Cost of Operations (3)
Way and Structures Maintenance	$ 400,098	4.4%	3.8%
Equipment Maintenance	1,013,431	11.2	9.7
Power Cost	1,077,098	11.9	10.3
Conducting Transportation	5,398,271	59.8	51.8
General and Miscellaneous	1,148,834	12.7	11.0
Total Operating Expenses	$9,037,732	100.0	86.6
Depreciation Expense	684,576		6.5
Accident Reserve Charges	667,232		6.4
Interest	42,670		0.4
Taxes	9,378		0.1
TOTAL COST OF SERVICE	$10,441,588		100.0

Municipal Railway of San Francisco

OPERATING EXPENSES AND REVENUE

Month of October, 1948

Item	Total	Percent of Item 6	Percent of Item 11	Street Car	Cable Car	Motor Coach	Trolley Coach
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Way and Structures	$ 67,488	4.5%	3.9%	$ 50,409	$ 13,024	$ 2,193	$ 1,862
2. Equipment	175,662	11.7	10.1	65,907	5,411	99,126	5,218
3. Power	172,252	11.4	9.9	75,659	5,745	85,442	5,406
4. Conducting Transportation	898,358	59.7	51.6	474,970	29,622	364,596	29,170
5. General and Miscellaneous	190,752	12.7	10.9	103,541	5,190	75,173	6,848
6. Sub-Total Mtce. & Operations	$1,504,512	100.0	86.4	$770,486	$58,992	$626,530	$48,504
7. Depreciation	114,096		6.6	39,165	1,433	67,091	6,407
8. Accident Reserve	113,990		6.5	60,075	3,706	45,405	4,804
9. Interest	7,181		0.4	5,460	260	1,215	246
10. Taxes	1,417		0.1	1,417	--	--	--
11. TOTAL COST OF SERVICE	$1,741,196		100.0	$876,603	$64,391	$740,241	$59,961
12. Operating Revenue	1,532,657			807,963	49,644	610,556	64,494
13. Operating Profit	(208,539)			(68,640)	(14,747)	(129,685)	4,533
14. Operating Ratio	113.6			108.5	129.7	121.2	93.0

( ) Red Figures

For the same period of time the above amounts are grouped by the four types of operation as shown below.

	Total Cost 6 Mo. Ending 12/31/48	Percent of Total
Street Car Operation	$ 5,323,390	51.0
Cable Car Operation	389,301	3.7
Motor Coach Operation	4,362,783	41.8
Trolley Coach Operation	366,114	3.5
TOTAL	$10,441,588	100.0

For purpose of the detailed analysis as covered by the following pages, the month of October of 1948 was selected as being representative

WAY AND STRUCTURES

As shown in the preceeding table the greater part of the expenditures charged to the Way and Structures group of accounts occur in the electric street car division with 74% of the expense, and cable car division with 14%. A further analysis follows:

Electric Street Car Operation

The Way and Structure group is comprised of about 18 accounts, three of which are divided into sub-accounts. Over 75% of the expense is accumulated under four accounts as follows:

Acct. 8, Track and Roadway Labor - $21,891, or 44.6% of the group total, consists almost entirely of charges from the Track and Roadway payroll.

Acct. 10, Paving - $4,248, or 8.4% of group total, consists of charges for repairs to track pavement. Surface pavement is repaired or installed by the Department of Public Works under a Municipal Railway Work Order. This accounts for about 68% of the cost. The remaining 32% is work performed by railway employees, concrete base for pavement and other items. The expense is divided about equally between labor and material.

Acct. 11, Cleaning and Sanding Track - $4,490, or 8.9% of the group total, consists of charges principally from Track and Roadway payroll. Material charges are from 2 to 5% of the total cost.

Acct. 22D, Overhead Trolleys - $7,383, or 14.6% of the group total, represents cost of repairing and servicing trolley wire and fixtures. The charges come principally from the Line Department payroll. Material charges amount to 2 to 5% of the account total.

The balance of expenses in the Way and Structures group consist of charges ranging from a few dollars to $2,000 or so against the individual accounts. About 75% of expense in the entire Way and Structures group of accounts originates on the Track and Roadway and Line Department payrolls.

Cable Car Operation

Ten ICC accounts and sub-accounts in the Way and Structures group are used to accumulate the costs of track and building maintenance for cable car operation. Over 80% of the group expenditures occur in two accounts, as follows:

Acct. C8, Track and Roadway Labor - Expenditures were $7,192, or 55.2% of the group total. This amount is almost entirely from track and roadway payroll.

Acct. C11, Cleaning and Sanding Track - Expenditures were $3,355, or 25.7% of the group total. About 3% of the total represents cost of materials used, such as, oil, grease and sand, the balance of the amount is from Track and Roadway payrolls.

Amounts charged to other accounts in the Way and Structures group were less than $1,000 in any account.

Motor Coach Operation

The total expense charged to the Way and Structures group was $2,193 to seven accounts. The charges consisted principally of pro rata cost of superintendence and maintenance of buildings.

Trolley Coach Operation

Expenditures in the Way and Structures group were $1,862 charged to five accounts of the group. $1,461 or 78% of this cost was charged to Acct. T22E Maintenance of Trolleys, 65% of that amount being for labor from the Line Department payroll and 35% for materials and supplies.

EQUIPMENT MAINTENANCE

The largest expenditures occurred in the electric street car and motor coach divisions, the comparative distribution of expense in October, 1948, being as follows:

Operation	Equipment Mtce. Percent of Total
Electric Street Car	37%
Cable Car	3
Motor Coach	57
Trolley Coach	3
	100

Street Car Operation

The accumulation of cost of maintenance and repair of rolling stock is provided for in about nine accounts. This operation accounts for about 7.5% of the total cost of street car service. The principal expenditures normally occur under three accounts.

Acct. 30, Passenger Cars - $41,429, or 62.9% of group total. The expense is principally labor charged from Shop payrolls. Materials and supplies amount to from 10 to 20% of the total cost.

Acct. 33, Electric Equipment of Cars - This account covers the maintenance and repair of motors and other electrical equipment of street cars. The cost amounted to $15,359 or 22.8% of the equipment group. Shop payrolls account for 75 to 85% of the cost, and materials and supplies for 15 to 25%.

Acct. 37, Shop Expense - This account covers the cost of heating and lighting shops, and miscellaneous expense for lubricants, waste, water, and other supplies; sweepers, cleaners, and other minor items. The cost amounted to $3,823 or 5.8% of the group total. Shop payrolls

covering watchmen, sweepers, and unskilled labor account for about 70% of the cost, materials and supplies for about 20%, and light, heat and water for about 10%.

Other accounts in the equipment group normally amount to less than $2,000 per month.

Cable Car Operation

Expense for maintenance of equipment is accumulated under seven accounts in this group and amounts to from 6 to 8% of the total cost of operation. Principal expenditures in this group occur in two accounts as follows:

Acct. C30, Passenger Cars - Charged with $3,920, or 72% of the group total. About 60% of the cost is for labor, the balance for materials and supplies.

Acct. C33, Grips and Dies Cable Cars - Cost was $1,312 or 24% of group total. About 85% of the expense is for labor, the balance for material and supplies.

Other charges in the group did not exceed $100 in any account.

Motor Coach Operation

Maintenance of equipment is accumulated in 13 accounts and sub-accounts of this group. Total expenditures in October, 1948, in amount of $99,126 was 13.4% of the total cost of operation. The principal expenditures occur in the following accounts of the group.

Acct. B38, Maintenance Automotive and Misc. Equipment - Cost was $2,042 or 2.0% of the group total. This account is prorated to the various services on a vehicle mile basis. In the system charges to the account for the six-months' period ending December 31, 1948, labor was 70%, materials and supplies 25%, and outside contractual services about 5% of the total cost.

Acct. B38A, Motor Coach Engines - Cost was $39,503 or 39.8% of the group. For the six-months' period ending December 31, 1948, distribution of charges was as follows: labor, 49%; material and supplies, 45%; contractual services, 6%. The railway contracts some work to outside firms, principally for such items as overhaul of diesel motors. The railway is not equipped to handle the work efficiently.

Acct. B39C, Axles, Wheels and Springs - Cost was $6,344 or 6.4% of the group total. Distribution over the six-months' period ending December 31, 1948, was as follows: labor, 90%; materials and supplies, 7%; contractual services, 3%.

Acct. B 39D, Tires and Tubes - Cost was $22,297 or 22.4% of the group total. This amount is practically all from contractual services and covers mileage paid for tire rentals.

Acct. B39E, Vehicle Bodies - Cost was $11,770 or 11.9% of the group total. Distribution over the six-months' period ending December 31, 1948, was as follows: labor, 58%; materials and supplies, 40%; contractual services, 2%.

Acct. B39G, Motor Coach Transmissions - Cost was $5,754 or 5.8% of the group total. Distribution for six months ending December 31, 1948: labor, 43%; materials, 55%; contractual services, 2%.

Acct. B39H, Brakes - Cost was $7,196 or 7.3% of group total. Distribution for six months ending December 31, 1948: labor, 37%; materials, 61%; contractual services, 2%.

POWER COST

The cost of power, including gasoline for motor coach operation, amounted to $172,252, or 9.9% of the total cost of operations for the month of October, 1948. The distribution of cost between services was as follows:

Operation	Percent
Street Car	44%
Cable Car	3
Motor Coach	50
Trolley Coach	3
	100

Street Car Operation

The cost of power is accumulated in six accounts in thepower group. This expense amounts to about 8.6% of the total cost of street car operation. The principal expenditures occur under two accounts. In October, 1948, the expenditures in those accounts were as follows:

Acct. 52, Power Plant Employees - This account covers the salaries and wages of employees operating power plants and substations furnishing power for street car operation. Cost amounted to $8,977 or 11.8% of the group total.

Acct. 59, Power Purchased - This account covers the purchase of power for street car operation. The cost amounted to $65,153 or 86% of the group total. Power purchased is prorated to the various types of operation on a vehicle mile basis.

Other accounts in the power group amount to less than $1,000 per month.

Cable Car Operation

Total cost charged to the power group of accounts fluctuates considerably due to the periodic renewal of worn cables and expense in repairs to broken and stranded cables which is charged to one of the accounts of the power group. During the six months ending December 31, 1948, the power group of accounts amounted to about 15% of the total cost of cable car operation. The principal expenditures occur in three accounts as follows:

Acct. C47.2, Power Plant Equipment-Cables - During the six-months' period ending December 31, 1948, this account amounted to $28,524 or 49% of the power group. Monthly charges varied from a low of $782 in August to a high of $13,582 in the month of December. During the same period labor costs were 27% and material costs 73% of the account totals.

Acct. C52, Power Plant Employees - During the six-months' period ending December 31, 1948, this account was charged with $16,960 or 29% of the power group. The expense is entirely from payrolls covering power plant personnel.

Acct. C59, Power Purchased - During the six-months' period ending December 31, 1948, the charges to this account amounted to $8,595 or 15% of the power group.

Motor Coach Operation

The power group for motor coach operation consists of two accounts amounting to $85,402 or 11.5% of the total cost of motor coach operation for the month of October, 1948. The accounts are as follows:

Acct. B53, Gasoline and Diesel Fuel - This account was charged with $85,391 representing the cost of fuel used in motor coach operation.

Acct. B59A, Power Purchased - This account was charged in amount of $51 covering lighting for car houses.

Trolley Coach Operation

The power group for trolley coach operation consists of three accounts and amounted to $5,406 or about 9% of the total cost of trolley coach operation for the month of October, 1948. The principal charges are in the following accounts.

Acct. T52, Power Plant Employees - Charges to this account amounted to $1,069 or about 20% of the group total.

Acct. T59, Power Purchased - Charges to this account amounted to $4,260 or 79% of the power group.

CONDUCTING TRANSPORTATION

The cost of conducting transportation for the month of October, 1948, amounted to $898,358, or 51.6% of the total cost of operation. The group includes about 15 accounts and sub-accounts. The following three accounts are prorated to the various types of service on a vehicle mile basis.

Acct. 63-Superintendence of Transportation
Acct. 67C-Special Agents and Fare Registers
Acct. 73-Operation of Telephone and Central Constol System.

Street Car Operation

The total expense of the Conducting Transportation group for the month of October, 1948, was $474,970, or 54% of the total cost of operation. Principal expenditures, amounting to nearly 99% of the group total, occur in five accounts and sub-accounts as follows:

Acct. 63, Superintendence of Transportation - This account covers the salaries and expenses of officers and assistants directly in charge of transportation. It includes division superintendents and assistants, dispatchers, car house clerks, and receivers, inspectors and instructors. The total amount charged for system operation was $77,986, or 8.6% of the system Conducting Transportation group. This amount was prorated to the various types of service on the basis of vehicle miles operated. The amount

allocated to street car operation was $26,876, or 5.7% of street car Conducting Transportation cost.

Acct. 64A, Conductors, and Acct. 64B, Motormen - These accounts cover wages of operators and platform men while engaged in the operation of street cars. It also includes the wages of ground loaders. In October, 1948, the total charges to these accounts amounted to $398,187, or 84% of the Conducting Transportation group. The amount included the estimated wage increase later approved by court action. The account also includes overtime, report, turn-in and travel time, and other allowances given while the employee is engaged in the operation of street cars.

Acct. 70, Carhouse Employees - This account includes the expense of servicing, washing and cleaning of street cars at the various car stations. The cost amounted to $39,546, or 8.3% of the group total. The charges are accumulated on the Shop payroll.

Acct. 83, Operation of Telephone and Central Control - This account, for system operation, was charged with $6,539, or 0.7% of the system Conducting Transportation group. The amount is allocated to the various types of service on the basis of vehicle mileage. The above amount for October, 1948, was made up of the following items:

8 Permanent Telephone Operators) 2 Temporary Telephone Operators) 1 Chief Operator)	$2,348
5 Inspectors in Central Control	1,687
2 Operators assigned to special duty	337
Pac. T&T Co. charges and tolls	2,167
TOTAL	$6,539

Cable Car Operation

In the month of October, 1948, $29,622, or 46% of the total cost of operation was charged to the Conducting Transportation group. The principal expenditures occur in the following accounts.

Acct. C63, Superintendence of Transportation - This account was charged with $2,352, or 8% of the group total. This is an allocated amount.

Acct. C64, Cable Car Operation - Charged with $24,342, or 82% of the group total.

Acct. C70, Car House Employees - Includes the expense of servicing, cleaning and washing of cable cars. Charged with $1,979, or 7% of the group total. The entire charge is for labor.

Motor Coach Operation

For the month of October the Conducting Transportation group of accounts was charged with $364,596. About 98% of the group total expense is included in the following six accounts:

Acct. B63, Superintendence of Transportation - Charged with $45,394, or 12.4% of the group total. This is a prorated amount.

Acct. B64, Coach Operators - Charged with $262,500, or 72% of the group total. Consists of wages of motor coach operators while engaged in the operation of coaches.

Acct. B67B, Lubricants and Waste - Charged with $2,919, or 0.8% of the group total. Cost is entirely for materials and supplies.

Acct. B70, Carhouse Employees - Charged with $46,012, or 12.6% of the group total. Charges consist of wages and salaries of employees engaged in servicing, cleaning, washing and greasing motor coaches.

Acct. B73, Operation of Telephone, Telegraph & Central Control - Charged with $3,545, or 1% of the group total. This is a prorated amount.

Acct. B78, Other Transportation Expense - Charged with $2,014, or 0.5% of the group total. Entirely for shop labor and represents the cost for handling wrecked or disabled vehicles.

Trolley Coach Operation

The Conducting Transportation group amounted to $29,170, or 48.6% of the total cost of trolley coach operation for the month of October, 1948. The principal expenditures occured in the following accounts:

Acct. T63, Superintendence of Transportation - Charged with $3,365 or 11.9% of the group total. The amount is a prorate of the total cost of superintendence on the basis of vehicle miles operated.

Acct. T64, Coach Operators - Charged with $22,785, or 78% of the group total. Represents wages paid to trolley coach operators.

Acct. T70, Carhouse Employees - Charged with $2,433, or 8.3% of the group total. The amount represents salaries and wages of employees engaged in servicing, washing and cleaning trolley coaches.

GENERAL AND MISCELLANEOUS

The General and Miscellaneous group of accounts for system operation was charged with $190,752, or 10.9% of the total cost of operation in October, 1948.

The charges to the accounts in this group are allocated to the various types of service on a vehicle mile or a vehicle hour basis as will be noted in the discussion of the individual accounts. The only exceptions are in Account 88B, Sick Leave, and Account 88E, Military Leave, in which cases charges are made directly to the division of service upon which the individual involved is employed.

Acct. 83, Salaries and Expenses of General Offices - This account was charged with $4,866, or 2.5% of the group total. Of the above amount, $1,750 originates on the salary payroll and represents the salaries of the Manager and Senior Accountant of the railway. The salaries and expenses of the Public Utilities Commission are allocated to four Municipal Departments, of which Municipal Railway is one. The monthly charge from this source amounts to about

$3,700 which is allocated to Account 83, Account 88D, Sick Leave-Medical Fees, and Account 89, Miscellaneous General Expense. In October, 1948, $3,116 was charged to Account 83. Allocations on the basis of vehicle miles are made to the various types of service.

Acct. 84, Salaries and Expenses General Office Clerks - Charged with $32,465, or 17% of the group total. Practically the entire amount originates on the monthly salary payroll. The account is allocated to the various types of service on the basis of vehicle miles.

Acct. 85, General Office Supplies and Expense - Charged with $4,671, or 2.5% of the group total. About 75% of the total is for contractual services consisting of rental, servicing and repair of tabulating, computing and adding machines. The account is allocated to the various types of service on the basis of vehicle miles.

Acct. 88, Pensions - Charged with $95,084, or 50% of the group total. The amount charged represents 8.415% of payrolls and is forwarded to the Retirement Board. Employee contributions are made through payroll deductions and also forwarded to the Retirement Board which administers the pension funds and makes the pension payments. This account is allocated to the various types of service on the basis of vehicle hours. In the case of street car and cable car operations the vehicle hours are doubled to give effect to 2-man operation.

Acct. 88B, Sick Leave - Charged with $29,487, or 15.4% of the group total. The amounts are shown on the various payrolls and as they are assembled for each type of service, no allocation is necessary. The charges by type of service for October, 1948, were as follows:

Operation	Amount
Street Car	$22,862.89
Cable Car	734.47
Motor Coach	5,285.33
Trolley Coach	604.11
	$29,486.80

Acct. 88D, Sick Leave-Medical Fees - Charged with $446, or 0.2% of the group total. The amount was for contractual services and allocated on vehicular hour basis, similar to Account 88.

Acct. 88E, Military Leave - Charged with $217, or 0.1% of the group total. The charges are assembled by type of operation and no allocation is required.

Acct. 89, Miscellaneous General Expense - Charged with $1,347, or 0.7% of the group total. Of the amount 53% was for labor. This account is allocated to the various types of service on the basis of vehicle miles.

Acct. 92D, Injuries and Damages Employees' Compensation - Charged with $5,240, or 2.8% of the group total. The account is allocated to the various types of service on the basis of car hours as explained under Acct. 88. The Municipal Railway is self-insured and the amounts charged to this account are computed in accordance with provisions of the Workmen's Compensation Insurance and Safety Act of the State of California.

Acct. 93, Insurance - Charged with $2,303, or 1.2% of the group total. The amount represents fire insurance premiums.

Acct. 94, Stationery and Printing - Charged with $1,791, or 0.9% of the group total. Represents value of stationery and supplies issued on stores requisitions. The amount is allocated to the various types of service on the basis of vehicle miles.

Acct. 94A, Tickets and Transfers - Charged with $2,888, or 1.5% of the group total. Represents the cost of tickets and transfers used in operation and is allocated to the various types of service on the basis of vehicle miles.

Acct. 95, Store Expense - Charged with $8,377, or 4.4% of the group total. Of the amount $3,320, or 40% represents salaries and wages of Municipal Railway employees handling stores and store records, the balance, $5,057, represents cost of services of Purchasing Department. Acct. 95 is allocated to the various types of service on the basis of vehicle miles.

Acct. 98, Rent of Facilities - Charged with $1,086. It results from the allocation to cable car, motor coach and trolley coach operation of a portion of depreciation on certain railway facilities, including general office building, equipment, radio control system, used jointly in cable car, motor coach and trolley coach operation.

General and Miscellaneous Expense, Electric Street Railway - This group of accounts for street railway operation was credited with $1,086, charged other types of services in October, 1948.

BUDGET AND BOND ISSUES

BUDGET

A detailed analysis has been made of the budget submitted to cover Municipal Railway operations during the fiscal year 1949-50 and also the budget submitted for previous fiscal year. To analyze these budgets is substantially equivalent to analyzing the financial statements as reflected by the books of the railway.

Budgets are not prepared upon the basis of analyzing each individual office, department or function of the operation to determine the extent to which economies or efficiencies might be possible but are almost entirely based upon an extension of the previous year's experience one year into the future, giving consideration only to known elements that will have an effect upon costs and revenues based upon prevailing or expected rates of labor, costs of material or other known quantities. It has, therefore, not been deemed necessary to burden this report with details as to the individual items representing the various amounts included in the budget. In a previous brief interim report in connection with this survey it was pointed out to the Board of Supervisors that these conditions exist.

The extent by which it may be possible to reduce the budget for the coming fiscal year is dependent upon the appropriate rearrangement of management, organization, facilities, service and functional procedures. Each dollar shown on the budget is presumably spent for the item to which it is charged whether it be labor, material or other services or commodities. To eliminate cost would obviously mean to eliminate sources of costs. The railway, under present operating conditions, finds it necessary to incur the expenditures included in the budget in order to preserve the present standard of service and equipment maintenance.

There are certain respects in which the organization is over-staffed with personnel and others in which it is under-staffed, the former predominating. There is a definite surplus of Inspectors and Street Loaders. There is insufficient personnel in equipment servicing and maintenance, and in top managerial offices. Some of these deficiencies can be corrected only by taking corresponding countermeasures if service and operations are to be continued without serious disruption.

BONDS

The status of bonds is generally shown by the Balance Sheet, Table II of the appendix, as to normal bond issues. Table XIII of the appendix briefly shows the intended disposition of the 1947 $20,000,000 Rehabilitation Bond Issue. One of the most significant features with respect to the status of this latter bond issue is the extent to which deviations have been made in the actual programming contemplated at the time the issue was submitted for approval to the people of San Francisco. Of the original bond issue $11,400,000 has either been spent or allocated; $5,500,000 of bonds were recently sold; and $3,100,000 remains to be sold.

Whereas the original program included the purchase of 55 new and modern street cars, those vehicles have been eliminated from the present planning which now includes 259 motor coaches and 209 trolley coaches as compared with 98 motor coaches and 361 trolley coaches in the original program. Correspondingly the present plan calls for a materially reduced amount for track reconstruction and rehabilitation of car houses, garages and shops because of the reduction in proposed street car operations. It is proposed in the new program to rehabilitate 55 of the older street cars at a cost of $167,000 as compared with the originally planned purchase of 55 new cars for which $1,705,000 had been allocated.

Of the $20,000,000 bond issue for the railway rehabilitation and modernization, a block of $6,500,000 was sold, bearing date of February 1, 1948, and a block of $4,900,000, bearing date of August 1, 1948. The redemption dates on these bonds run annually to August 1, 1963.

Of the $2,200,000 bond issue for the payment of the balance of the Market Street Railway Company purchase, $1,950,000 has been sold. From the proceeds of this sale, the Municipal Railway, on May 7, 1948, paid the Market Street Railway Company $1,881,398.71 on the principle and $63,946.99 in interest, thus liquidating all debt to the Market Street Railway Company on the purchase.

The expenditure of funds and the payments for redemption and interest on the the above two bond issues are being assumed by the Municipal Railway.

The expenditure of the $22,850,000 street improvement bond issue and the $5,000,000 off-street parking bond issue, and the responsibility for interest and redemption at present are being assumed by city departments other than the railway.

$20,000,000 Rehabilitation Modernization Bonds
Allocations of $11,400,000 Sale of Above Issue

Equipment		
259 - 44-passenger Motor Coaches	$ 4,157,488.00	
219 - Motors for Fare Boxes	15,787.00	
190 - 44-passenger Trolley Coaches	3,684,711.00	
Modernization of 55 Existing Street Cars	166,725.00	$8,024,711.00
Carhouses, Garages, and Equipment		
Geary & Potrero Car Houses Including Equipment	$ 886,821.05	
Ocean Bus Yard Including Equipment	803,947.90	
McAllister Street Yard	39,839.63	
General Shop	75,000.00	1,805,608.58
Trolley Coach Overhead Construction		
McAllister & Hayes Street Lines	$ 285,000.00	
Haight-Masonic Streets Line	90,342.00	
Haight-Sunset Line	188,574.00	
Fillmore Street Line	306,237.60	
Market Street Operation	107,555.00	
Mission Street Operation (Partial)	12,000.00	989,708.60
Track Reconstruction		
Replacement of Inner Tracks on Market Street, Eddy Street to Valencia Street	265,000.00	
Miscellaneous Locations	26,381.62	291,381.62
Cable Car Turntable		
Reconstruction of turntable at Powell & Market Streets		20,000.00
Contingencies		
Includes preliminary expenses, legal expenses, and office plans and specifications.		43,680.42
Materials and Supplies		224,909.78
Total Amount of Bond Sales as of October 31, 1948		$11,400,000.00

BOND SALES

To August 31, 1948, from bond fund monies, 209 forty-four passenger motor coaches have been received and placed in operation on the following lines where street car operation has been discontinued.

3	Sutter - Jackson
4	Sutter - Sacramento
5	McAllister
6	Haight - Masonic
7	Haight - Ocean
21	Hayes
22	Fillmore
25	Bryant

STRUCTURES AND FACILITIES

Structures and facilities used in performance of passenger transportation by the Municipal Railway have been generally described heretofore and this chapter will serve only to point out certain features that are considered to be important to the overall problem and to briefly identify the various items.

PASSENGER CARS AND SERVICE VEHICLES

The quantity, types, assignments to service and other data relative to passenger equipment and service vehicles is shown in tabular form in the appendix of this report by Tables XXIX to XXXVI inclusive.

Street car equipment consists for the most part of old cars that are no longer suited to the requirements of present day traffic congestion and passenger volume. One of the principal features of the present service problem is the inability of these old cars of obsolete design to attain the desired speed in traffic in the congested downtown area and on the hills. If these cars were replaced with modern street cars of recent design incorporating high rates of acceleration and deceleration with smooth and quiet operation, the maximum capacity of existing rail lines could be increased by an amount between 25 and 50 percent of present capacity.

Although the existing cars are of sturdy construction, simple mechanically and possess many more years of active service, they do not fit into present requirements and in the long-range programming will be uneconomical as compared with the advantages of new equipment and effect upon revenue.

Service, repair and emergency vehicles are totally inadequate to satisfactorily meet requirements of the railway. These vehicles are of antique design improperly equipped with tools and facilities for expeditious field work and are not sufficiently flexible to perform the diversified nature of field servicing and repair functions required of them. The lifting capacity of most of this equipment is too light for the work to be done. They also should be replaced with modern equipment in the future program.

ELECTRICAL DISTRIBUTION

Facilities

Table XLV of the appendix lists the various substations feeding electric power to the rail and trolley coach operations of the system. These substations and the overhead distribution lines, as well as negative return feeders, were originally laid out as two separate systems, one for Municipal Railway prior to consolidation and the other for the former Market Street Railway Company. There was previously no coordination of the two systems and consequently at the present time the same condition exists, although there has been some interconnecting of feeding facilities.

Transmission, distribution and return feeder systems are of the conventional design with power supply located at appropriate points. Substations, however, are equipped with antiquated conversion machines of motor generator and synchronous converters some of which were installed in 1910 and the most recent having been in 1924. Although the substation facilities are maintained in a high standard of repair and service, due to the development in the art of conversion during recent years, considerable loss is incurred due to inefficiency of existing equipment. Installation of modern mercury arc rectifier plants, together with redesign of the electrical distribution system would result in material economy through reduction of power loss.

Power for Substations

Power for operation is furnished under the P9 schedule of rates of the Public Utilities Commission of the State of California. One system, which will be designated as System A for reference, is that of the Municipal Railway before it purchased the Market Street Railway. Power is furnished to this system by eight substations owned and operated by Pacific Gas & Electric Company. This power is billed to the Railway by the Bureau of Light, Heat and Power. The cost was 1.136¢ per KWH for the fiscal year July 1, 1947, to June 30, 1948.

The other system, which will be designated as System B for reference, is that of the former Market Street Railway. The Bureau of Light, Heat and Power acts as a sales agency for the Hetch Hetchy power which is brought into the Newark Station of the Pacific Gas & Electric Company and is distributed over this latter company's lines and is delivered at 11,000 volts, 3 phase, AC to the six substations of the Municipal Railway. A rental or toll charge is made for this distribution service and is included in the power cost to the Railway. This cost was .859¢ per KWH for the fiscal year July 1, 1947, to June 30, 1948. This arrangement was prompted by the passing of the Raker Act of 1945.

Due to the abandonment of rail lines by the Railway, the loading on System B has been diminishing for the past few years. During the month of February, 1949, the 30 minute maximum for the system was only approximately one third of the rated capacity.

It appears probable that a fair and equitable arrangement might be worked out between the Bureau of Light, Heat and Power, the Railway and the Pacific Gas & Electric Co. whereby the latter company would furnish all power for the Railway operation and purchase on equivalent amount of the Hetch Hetchy power from the City.

The Accounting Department of the Railway has been arbitrarily using a figure of 3.52¢ per trolley coach mile for pro-rating the power charges of account 59, Trolley Coach Power T59. This is a figure established a number of years ago by the Market Street Railway for billing to the Municipal Railway the cost of power used in the latter's operation of their original nine trolley coaches which were put into service in 1941. It has recently been decided to change from 3.52¢ to 5.0¢ per coach mile for the purpose of pro-rating the power cost to the trolley coach operation and this will continue until further checks of the actual cost of this operation.

Overhead Lines

The headquarters of the Overhead Lines Department is located at Turk and Webster Street in an old wooden building formerly used as a horsecar barn. The office of the General Foreman of Lines is there also there, also a small repair shop and a relatively large amount of space where both new and old line materials are stored. The Line Department tower trucks and tower cars are parked in a yard adjacent to the building or some of the trucks may be parked inside of the building.

This subdepartment maintains all of the overhead lines and distribution system used by the Railway. They make feeder changes, maintain the elctric switches, signal system, yard lighting and lighting at the terminals of the various lines, also maintain the poles and pole fixtures owned by the Railway Company.

The repair work in the tunnels is done by the day crews under the difficulty of having to work between the car headways, and the work is interrupted continuously for this reason at from one to ten minute intervals. Since there are no crossovers in the tunnels, it is necessary for the tower car to proceed to the end of

the tunnel to clear each approaching car. This is obviously a very inefficient and costly operation. This plan is being followed according to Railway officials because of the necessity of working the men a minimum amount of overtime. However, he readily admitted it would be far less expensive to pay the crews double time and do the tunnel work in the hours between 1 A.M. and 5 A.M. when only Owl service is in operation.

The tunnels are equipped with block signals and also lights that are intended for speed control. These latter are actuated by electric time clocks.

No periodic inspection or check is made of the signalling system and its maintenance is prompted by reports from Inspectors or trainmen when trouble develops. The present signal system of the Twin Peaks Tunnel is unreliable and is frequently not observed by the train crews. This combination is creating a very severe hazard of car collision.

PRESENT MAINTENANCE, SERVICE AND VEHICLE STORAGE FACILITIES

A general description of the various facilities is shown by the following tabulation and the description following applies to the item numbers of this tabulation.

February 20, 1949

Item No.	Status	Type of Vehicle Serviced	Approx. Max. Vehicle Cap.	(a) Total Land Area in Square Ft.
1	Active	Street Car-Geary St.C.H.	136	97,686
2	"	Street Car-Geneva St.C.H.	88	146,500
3	"	Street Car-Sutro St.C.H.	107	144,000
4	Inactive	(b)Street Car-Turk-Fillmore St.C.H.	70	56,719
5	"	(c)Street Car-13th Ave. Yard	100	144,000
6	Active	Trolley Coach-Potrero (Now being remodeled.)	250	192,000
7	"	Motor Coach-24th & Utah	130	80,000
8	"	Motor Coach-Ocean	150	257,762
9	"	Motor Coach-McAllister	130	93,984
10	"	Cable Cars-Wash. & Mason	40	39,647
11	"	Trucks-Turk & Webster		56,719
12	"	Elkton Shops		89,330

(a) Includes total land area at the location, some of which is occupied by buildings or is used for purposes other than vehicle storage.

(b) Carhouse is not in active service but is used for salvaging equipment from abandoned cars.

(c) Yard used for storage of abandoned cars.

Geary Car House

The Geary Car House building is a reinforced concrete structure. In addition to the carhouse, this building also contains the offices of the Transportation and the trainmens quarters of the Division, also the main offices of the Railway. It has a lower level of storage tracks for 38 cars, which enter from Presidio Avenue,

and the upper level of storage tracks that houses 98 cars is entered from Geary Street. A portion of this building was formerly used as the main shops of the Municipal Railway before the consolidation with the Market Street Railway. At the rear of one of the bays in the car house an area is used for overhauling car trucks, for forging and fabricating brake rigging parts, and repairing fenders for the cars of this Division. At the rear of another bay an area is used for repairing units of the car control equipment, and doing certain carpenter work such as sash and door repairs, repairs to car flooring, also for storing old files.

The heavy repair work of trucks, brake rigging and electric equipment above described appears to be a holdover of personnel shop equipment and methods of Municipal Railway operation since similar work is done for other cars of the system which are operated from the Geneva and Sutro car houses, at the main Elkton Shops.

The storeroom facilities of this car house are inadequate. The two level arrangement of storage tracks is awkward and results in loss of time in switching cars and also makes personnel and work supervision more difficult.

At present there are 145 cars assigned to this car house, which is beyond its normal capacity. This necessitates parking some of the cars on the street.

The carhouse needs remodeling and reconditioning inside and out. It is planned that this building will ultimately be used entirely for trolley coach operation under the Rehabilitation Plan.

Geneva Car House

Located off San Jose Avenue and south of Geneva Avenue, the carhouse yard is entered from San Jose Ave. There is a ladder track in the yard for entering the carhouse. The building is brick and wood and is one of a group of buildings of the Railway which include a brick office building now used for the Division offices and trainmen quarters, also for the office of the Superintendent of Equipment and certain offices of the Personnel Department. The Geneva Avenue substation is a part of the group of buildings. The carhouse is old, the storeroom is inadequate, and the general arrangement and appearance is poor. These facilities are located directly across San Jose Avenue from the Elkton shops. It is planned to abandon this carhouse when the new street car terminal listed in the Rehabilitation Plan is completed.

Sutro Car House

Located on Clement Street at 33rd Avenue, the carhouse is a wooden frame building and also houses the Division Transportation offices and trainmen's quarters. The building is old and the general arrangement and appearance is poor. There are outside storage tracks on both the east and west sides of the carhouse and in the rear. This carhouse will be abandoned when the new street car terminal listed in the Rehabilitation Plan is completed or when a sufficient number of the present cars have been replaced by trolley or motor coaches to permit the remaining active cars to be housed in the Geary and Geneva Divisions.

Turk and Fillmore Carhouse

Located at Turk and Fillmore Streets, this is a brick and wood building with tracks entering from Steiner Street. It has been abandoned as an active Division point and is now being used to store a number of old passenger cars from

which equipment is being salvaged. The storage track level in the carhouse is approximately 3' below the level of Steiner Street and is reached by a ramp track. The tracks in the carhouse are connected with a series of cross-overs so that a car may be switched from the ramp track for storage on other tracks.

13th Avenue Yard

Located on Lincoln Way and 13th Avenue, this is a storage yard formerly used by the Market Street Railway and is now being used for storing of abandoned street cars prior to their sale or disposal.

Potrero Carhouse

Located on Hampshire Street, between 17th and Mariposa Streets, this is a reinforced concrete building. It was used as a carhouse until January of this year, at which time cars were transferred to other carhouses and a trolley coach division was established there. The coaches are now stored and serviced in the yard west of the building, while the building is being remodeled for an expansion of the trolley coach operation. This will be a two-level arrangement for 185 coaches entering and leaving the lower level from Mariposa Street and 65 coaches entering and leaving from 17th Street.

24th and Utah Garage

Located at 24th and Utah Streets, this building is of brick, steel and concrete with wood and paper roof and is divided into three bays with a wall opening near the north end, thus adjoining the bays. There is an adjoining structure which houses the Division offices and operators' quarters.

At present 153 motor coaches are assigned to this location. In addition to this, coaches operating from the McAllister Division are sent there for major repairs. There is insufficient room and approximately 90 coaches are parked on adjacent streets during a portion of each night. This creates both a hazardous and costly operation.

The motor coach unit overhaul shop for the entire railway operation is located in the rear of the east bay. It is overcrowded, poorly arranged, and inadequately equipped. A new unit overhaul shop will be contained in the new main shop which is now being planned as a part of the Rehabilitation Plan. When this is completed, the above mentioned unit shop will be abandoned. The main motor coach storeroom and office of the Superintendent of Garages are also in this building. The service station is located in the entrance of the east bay of the building and is entered from 24th Street. This arrangement necessitates the coaches standing on 24th Street in the peak "pull-in" period, which partially blocks this street and creates hazardous and undesirable conditions. After being serviced, coaches are driven approximately three-quarters the length of the east bay and are turned left into the center bay or may continue across it into the west bay. They must again be turned left in either of these bays for parking within the bays, or continue on to be parked on the street. This arrangement is a waste of undercover space, necessitates relatively intricate coach movements, and is a very undesirable arrangement.

A power operated coach body washer is located near the front of the middle bay. This is also a waste of undercover space. A power hoist for chassis washing and a parts washing spacing is in the rear section of the center bay. Ten hydraulic hoists are in the west bay and are used for inspections and heavy unit replacements.

The whole arrangement is inadequate, awkward, and results in an abnormal number of coach movements and a resulting high cost of operation. The Rehabilitation Plan includes $175,000 alloted for an additional storage yard in this area.

Ocean Garage

Located at San Jose and Ocean Avenue is the new Ocean Garage, now nearing completion of the first stage, which is for 150 coaches.

202 coaches are now operated from this point as the construction work continues. The temporary yard to the immediate west of this location has been paved and is used as an additional parking area. The coaches enter from Ocean Avenue, pass through the four lane service station, through the repair shop for inspection or repairs and thence to the parking areas, which are on two levels. The levels of the upper and lower yard are reached by a ramp. The repair shops are well arranged. A power operated coach body washer is installed in the yard to thewest and south of the repair shop. There is not enough room ahead of the service station for an operation of 220 coaches, as only 12 coaches may be parked between the yard entrance and the station. This will result in the necessity of allowing coaches to back up on the street or they will have to be re-shifted inside of the yard to regain alignment for going through the station.

The station has four 6,000 gallon gasoline tanks and one 5,000 gallon engine oil tank. No arrangement has been made for paralleling the service station with Diesel fuel storage and pumps to provide for the possibility of servicing both Diesel and gasoline coaches in any of the service station lanes. This should have been done during the original construction to avoid the high cost that will be necessitated at a later date should this be found desirable.

At least three oil tanks should have been installed to permit different types and weights of oil, to give additional flexibility, and to permit continuous operation in the event of a tank or line failure.

McAllister Yard

Motor coaches commenced operation from this Division on June 1, 1948. This is a temporary arrangement pending enlargement of the storage yard at the 24th and Utah Division. Located on Masonic Avenue between McAllister and Fulton, the Yard is on the site of an abandoned rail operation of the Market Street Railway. The coaches are serviced at two small three-sided sheds, each of which contains a fuel pump and also several drums of engine oil. There are three open pits in the yard that are used for lubrication inspections and light maintenance work. An old wood structure near the center of the yard is used to house the Transportation Department officers and operators quarters. Adjacent to it is a small fireproof structure used for oil and lubricant storage. A small wood structure along the east side of the yard is used as the office of the mechanical foreman and also for storing a limited number of parts and supplies. An old abandoned brake tunnel is located near the center of the west side of the yard and is used for storing tires and as a small repair shop. A coach body washing area is arranged with wooden platforms to facilitate roof washing near the south side of the yard. The yard surface is poor. There is no cover over any of the pits or repairs or adjustment areas. Even for the most temporary period these conditions are deplorable. In inclement weather it is thoroughly impracticable to properly inspect and repair the coaches. Poor appearance and performance results from this operation.

Turk and Webster

Located at Turk and Webster Streets, this is an old wooden building which was used by the Market Street Railway as a horsecar division. There is a fuel service pump adjacent to the building. This site is used to service and repair service trucks, automobiles, and motorcycles. In one corner of the building is a storeroom and a small repair shop. A number of the trucks used by the track and other departments are parked here at night and when not in service. Line department trucks are parked in another old wooden building on adjoining property. In the latter there is a small repair shop of the Line Department. Also many line department materials and supplies are stored at this point. The building also contains the office of the General Foreman of Lines.

Elkton Shops

Located just off of San Jose Avenue, west of Ocean Avenue, the Elkton shops are a group of wood and sheet metal buildings. These are the old shops of the Market Street Railway. They are obsolete in arrangement and equipment and their appearance is very poor both inside and outside. The overhauling and repainting of the rolling stock is done at this location, and parts and materials fabrication is done here. These shops include a small brass foundry that is used to make many castings, including traction motor bearings, car journal bearings, overhead line parts, and other specialty castings.

The Rehabilitation Plans include an item of $1,500,000 for a new shop at this location.

FACILITIES UNDER CONSTRUCTION

The equipment storage and maintenance facilities now under construction are -

The Ocean Garage (first stage) - estimated cost, $1,000,000.00.
The Potrero Trolley Coach Division - estimated cost $750,000.
Potrero Carhouse - remodeled for trolley coach operation.

The general arrangement at Potrero Division provides on the lower level, sever pits long enough to hold two coaches each. These are located near the entrance to the building from Mariposa Street and one additional pit that will hold four coaches is located nearest the bay that contains the shop. In the extreme west bay are located the storeroom, fire room, locker room, repair shop and chassis wash pit. One automatic body washer is shown located in the car house near the northwest corner and another is located near the center and near the west side of the storage yard. The plan of operation is that the coaches are to turn north and enter the car house from Mariposa Street, receive a Safety Inspection over one of the seven pits above mentioned, and continue in a north direction, making a left turn near the rear of the carhouse. They will continue west until reaching one of the north and south parking lanes in the storage yard that is west of the carhouse. If they have not passed through the coach body washer that is in line with the coaches which enter the extreme east bay, they may continue through the yard to the extreme west lane and pass through the second washer and will then have to re-enter Mariposa Street, again pass through the carhouse, and eventually be parked.

The repair shop has six repair pits and three repair floor sections that run east and west, also the chassis wash pit. These are all entered from the parking yard and are at right angles to the parking lanes and overhead trolley.

It is not planned to put overhead supports into the repair shop and it will therefore be necessary to push and pull the coaches in and out of these facilities or use long flexible cables handled from the ground for furnishing power to the vehicles when they are out of range of the overhead trolley lines. Either of these arrangements is awkward, hazardous, and expensive to operate as two men are required for each vehicle movement, and it will be necessary to back across parking lanes that may be blocked by parked coaches or through which coaches are being operated.

It would have been far better to use one or even two of the west bays for a repair shop, with three pits in line of normal travel of one coach capacity each and space sufficiently far apart to permit a coach being turned off of any pit into the adjacent line of travel or vice-versa, and thus by-pass coaches that are standing in their direct lane of travel.

The washers are not properly located to give a minimum number of coach movements. It is desirable to so locate the automatic body washers in line or normal travel so that as large a percentage of coaches as possible may be operated through it before reaching their parking position. It appears it might have been possible to do this by locating the washer in the east and west line of travel and near the northeast corner of the storage yard. The second stage of remodeling this Division covers the upper level, which is entered from 17th Street. Three safety inspection pits of one coach capacity each and one through lane are provided in the single building bay. The coaches turn right after leaving the building, proceed west and made another right turn and proceed north in the parking lanes of the storage yard which is west of the building. An automatic body washer is to be located at the south end of the building in line of one of the inspection pits. This washer cannot be reached by the coaches that pass over the east inspection pit. As above mentioned, it is desirable to locate the washer in a normal line of travel where the largest percentage of coaches may pass through it before reaching their parking position. It appears possible to locate the washer in an east and west position near the southeast corner of the storage yard, thus permitting all of the coaches that are to be parked in the five west lanes to pass through it.

The two level arrangement is awkward, necessitates splitting of thesupervisory and maintenance crews, making the supervision more difficult and will also result in an extraordinarily large number of coach movements as coaches in the upper level, requiring heavy repairs, must be shifted to the lower level.

FACILITIES CONTEMPLATED FOR FUTURE CONSTRUCTION

It is planned to remodel the north lower floor of Geary carhouse and construct storage yard for 155 trolley coaches. This is scheduled for completion in December, 1949 at a cost of $600,000. The plan is an extremely undesirable arrangement that will result in high first cost and will present many operating difficulties, including excessive coach movements, hazardous operation into and from the street and inconvenience to the Operating Department personnel.

It shows that the coaches traveling in a southbond direction enter the storage yard near the southeast corner from Presidio Avenue and proceed west in the Yard parallel to the open side of the repair shop. They must swing sharp to the right (north) in order to obtain clearance of the entrance way into the building, After traveling south across the east bay of the building they make another left turn (east) and proceed to the "Safety Inspection" pits position. After receiving the "Safety Inspection" they must proceed into Presidio Avenue, make a left turn (north) and another Left turn (west) into the Yard entrance above mentioned, then

proceed to a parking lane and turn right (north) to be parked. This takes them over the same line that they first entered and it must be used by other coaches that are preceeding to the "Safety Inspection" (daily) pits, and it is inevitable that congestion will occur. Since this line must be kept clear it cannot be used for preparking. This plan necessitates every coach making five 90° turns and two additional turns of approximately 45° each after it has entered the Yard, before reaching its normal parking position. If the coach is to be washed, it must completely circle the parking yard again, adding four more 90° turns.

The repair shop occupies the north bay of the building. The plan shows it must be entered from the north side and the coaches must travel to it over the same line that is used for entering both the inspection pit areas and the parking lanes. A coach cannot enter or leave the repair shop under its own power unless long flexible cables (hand handle) are used. This operation is awkward and hazardous. It is probable that in lieu of using it a gas operated "mule" will be used to push and pull the coaches into and from the repair shop. This is also awkward and is hazardous and usually results in damage to the equipment. If coaches are parked in the extreme south end of the parking lanes, they will have to be moved before a "mule" can be used to push or pull coaches into or from the repair shop.

Presidio Avenue is a much traveled thoroughfare and the multiple operations of left turns from it into the coach yard necessitated by this plan will result in severe traffic collision hazards.

In addition to the above, the Operating Department quarters are to remain in their present location, which is entered from Geary Street and which is over a block from the nearest corner of the storage yard, thus requiring an extraordinary amount of time of the operators.

It is planned to add 13,000 square feet of office floor space to the present main office by remodeling the unused substation space in the present Geary carhouse. This is cheduled for completion in June, 1949, and the estimated cost is $40,000.

This space is now used for stationery stock and for stocking some parts used for car maintenance in the geary carhouse. It is located adjacent to Presidio Avenue and between the lower level of the car house entrance and the Presidio Avenue office entrance.

If the plans are carried out for remodeling the lower level carhouse and constructing a storage yard on the adjacent property for trolley coach operation, this proposed office space should be considered for location of the operating quarters now at the corner of Geary and Presidio.

It is planned to add 4,500 square feet of office space to the main offices by an addition to the upper floor of the present building. This is scheduled for completion December, 1949, and the estimated cost is $160,000. The offices of the system are now widely scattered through the city and the present main offices at Geary and Presidio are overcrowded.

The following is a resume of the office locations:

1. Main office - Geary and Presidio
2. Personnel and Safety - 17th and Potrero
3. Personnel Processing - 2301 Geneva
4. Physician - 450 Sutter Street
5. Assistant Director, Bureau of Public Service - 1345 Turk Street

6. Trolley Topics - 1345 Turk Street
7. Utilities Engineering Bureau - 425 Mason Street
   (A large drafting room is at Geary and Presidio)
8. Assistant Director, Bureau of Accounts - 425 Mason Street
9. Public Utilities Commission - City Hall
10. Manager of Utilities - City Hall
11. Director, Bureau of Public Service - City Hall
12. Director, Bureau of Public Accounts - City Hall
13. City Attorney - City Hall
14. City Purchaser - City Hall
15. City Controller - City Hall
16. Civil Service Commission - City Hall

All of the above offices have functional duties in connection with the operation of the Railway. There is not included in the above the various locations of the operating Divisions, shops, substations and storehouses.

Track and Line Department Yard for storage of service equipment and line and track materials is to be located immediately east of the new central shops. This is scheduled for completion in June, 1950, at an estimated cost of $15,000.

Although this location is near the main shop, which is desirable, it is very far from the center of both the track and distribution systems. The dead mileage and dead time of the line and maintenance crews that will make their headquarters there will be relatively high. It is suggested that a more central location be obtained. If the Turk and Webster property is not to be used for any other railway purpose, it should be carefully considered. However, if this property is to be used, the present old buildings should be torn down and new quarters built.

If the cable car operation is to be abandoned, the Washington and Mason car house and yard might also be considered as headquarters for the track and line department as this building might be remodeled and made suitable for the purpose.

A question of additional storage yard for motor coaches near 24th and Utah Garage is contemplated. This is scheduled for completion in November, 1949, at an estimated cost of $175,000.

If this location is to be continued for motor coach operation, there is no doubt that additional space is essential as approximately 90 coaches now operating from that point are presently being parked on the streets due to lack of space in the garage.

Before the above plan is put into effect, details should be thoroughly worked out to ascertain whether or not the purchase of the new property will permit a satisfactory final plan. The present service station facilities are not properly located and a major change is desirable both to improve the station facilities and permit adequate parking of coaches approaching the station for servicing in the peak "pull-in" period. It is very undesirable to park coaches on the streets while they are waiting to be serviced, and it is also undesirable to park them in a temporary position within the yard, which will necessitate additional coach movements to circulate them through the service station as this later results in a continual wasteful operating expense.

The proposed location of new street car terminal facilities is near Lake Merced. It is intended to house all of the surface street cars at that location, upon completion of the Rehabilitation Plans. These plans indicate that a total of only 144

cars, including 15% spares, will be needed to service the remaining rail lines N, J, K, L and B. It appears that if the car terminal and storage for these lines is to be located near Lake Merced that considerable dead mileage would be involved.

It appears unfortunate that the Potrero carhouse, which was relatively modern in design, could not have been saved for the proposed carhouse rather than spend One Million Dollars for a new one. This carhouse is now being remodeled for trolley coach operation at an estimated cost of One Million Dollars. As indicated elsewhere in this report, when the remodeling is finished, it will be far from a convenient arrangement for trolley coach operation.

It is suggested that an effort be made by the Railway to trade its Turk and Fillmore property, which is now proposed for abandonment, together with the Lincoln Way and 13th Avenue property, to the Playground Department for the playground area that is now bounded on the north by Turk Street, on the south by Golden Gate Avenue, on the east by Gough, and on the west by Laguna. This playground contains a small building in which is located the central fire alarm control. However, it does not appear that it would be necessary to move this unit in order to obtain adequate room and a very splendid car division arrangement.

The Turk and Fillmore property of the Railway is only two blocks west of this property and is of sufficient size to be used for the various courts and playing facilities that are now constructed on the aforementioned property. It is probable that the Lincoln Way and 13th Avenue property will be very desirable for playground facilities and that an overall plan of mutual benefit to both the Railway and the Playground Department might be effected.

Central Shops for General Repairs to Rolling Stock is to be located on the grounds now occupied by the present paint shop for the temporary storage yards of the Ocean garage, which will cost approximately $1,500,000.

The General Manager advised that this shop is to be suitable for maintaining all surface rolling stock equipment and all subway rolling stock if and when it is obtained. However, the Manager of Utilities and the General Superintendent of Equipment and Overhead Lines advised these shops were intended for maintaining only the surface vehicles, and other facilities would have to be constructed if and when subway rolling stock is obtained.

The plans for the new shops are not complete and we have seen only the preliminary layout which proposes a two level arrangement. The plans do not appear to be adequate for providing proper facilities for handling the main shop work that will be necessary for a system this size. The equipment supervisory personnel seems to be aware of this but advised that they do not have sufficient authority or control to insist on their ideas being carried out. The objecetions to their ideas of insufficient space and general arrangements are over-ruled by the Utilities Engineering Bureau on the grounds that the cost of a new shop must be kept within the appropriation limits.

In spending $1,500,000 for a new shop it would appear prudent to plan it for possible future expansion to meet the demands of the rolling stock fleet maintenance for at least 40 years in the future.

It is our understanding that provisions are made in the proposed plans for housing only four streetcar and 12 rubber tired vehicles in repair positions at any one time. Further, that the paint shop will house only four street car positions or six rubber tired vehicles at any one time. As has been previously

mentioned in this report, it is desirable to maintain a proper continuous "overall" program on all rolling stock. The present Rehabilitation Plan indicates that when it is completed the passenger rolling stock fleet, exclusive of cable cars, will be 150 street cars, 348 trolley coaches and 498 motor coaches.

Unless a very large number of spare units of equipment such as complete street car trucks, motor generator sets, switch groups and such are carried in stock and provisions are made for having these readily available for immediate application to the car overhauled, at least three weeks will be required to complete a car overhaul, including painting. This will require not less than four repair shop spaces and does not provide space for repairing major wrecks or extraordinarily heavy repairs incurred from fires and major equipment failures which are continually occurring on a system of this size, nor does it provide for cars being held in a repair position longer than the normal schedule on account of material or part shortages, not less than seven spaces should be provided for cars and not less than 20 spaces should be provided for rubber tired vehicles. In addition to this, complete and modern facilities should be provided for scrubbing the rolling stock prior to the overhaul. Overcrowded conditions in a shop of this kind result in extensive loss in manpower whenever it is necessary to shift equipment and materials before the normal work is completed. Since the main shops are used for doing all major work on a rail system, it is desirable to provide additional space for special programs that would require the remodeling of rolling stock to meet varying conditions such as a program for the installation of one man equipment or the installation of safety doors even though one man equipment may not be installed, the installation of Lifeguards in place of the Eclipse type fender, the building of special bodies on motor trucks.

It further appears that the proposed location of these shops is far from the center of the Railway system operations and will involve an abnormal amount of travel time to and from the various carhouses and garages. Rehabilitation Plans include an allotment of $475,000 to rehabilitate the Ocean Avenue track from 19th Avenue to Brighton Way, which is in very bad condition at this time. It is used to reach the Shops. Although the K line is now operated over this section of track, it may be desirable to substitute trolley coach or motor coach operation and abandon the rail operation.

One extremely important feature that should be given serious consideration in planning for the future is the necessity of proper location of garage storage facilities and repair shops. Little consideration is given on this property to the effect of deadhead miles either from the point of view of cost or service interference. A well-designed system should have all vehicle storage and service facilities located in such position that a minimum of vehicle mileage is involved in getting equipment into service and out of service and to and from repair facilities. There are certain features of cost that vary in direct proportion to the number of vehicle miles and correspondingly labor cost is in direct ratio to the number of miles operated and the hours during which equipment is in transit in non-revenue service.

The present plan of facility arrangement is not properly suited to the ideal condition. Actually it is far from that. The program has largely been developed around the presently available facility areas.

CABLE RAILWAY OPERATIONS AND SERVICE

The cable railway operation presents one of the most difficult problems of the entire system. Although it is relatively small in terms of miles of line and car miles operated, it is a real source of financial and operational problems. The situation is aggravated in view of the fact that sometime ago public-spirited citizens, who were more impressed by the historical value of the facilities than with the economies and operating problems, were instrumental in the passage of a city ordinance requiring perpetuation of the system.

Under conditions presently existing, there is nothing that can be done to rid the city of this nuisance. This report would not be complete, however, if comment were not made as to the extent to which these antiquated operations contribute to the adverse financial status of the system as a whole.

The only value of the cable cars in the present world of mass passenger transportation is for museum purposes. They would serve well as a model line in Golden Gate Park, or for a few blocks to Coit Tower, as a means of preserving a remnant of this novel type of transportation. The city streets of San Francisco, however, are no place for a museum piece.

Most elementary analysis of the economic characteristics of the operation indicates definitely that it is a tremendous burden upon the public and a real accident hazard on the streets, its service highly undependable, the cars are extremely slow in operation, the facilities are threadbare and broken down, and in many instances, it is practically impossible to obtain parts for repair and servicing. Many of the parts can only be obtained by custom forging and through the company's foundry. The safety record of the cable lines is extremely unfavorable, as compared with other modes of transportation in San Francisco.

The cars themselves, which were designed for traffic conditions prior to the turn of the century when horses and wagons and pedestrians made up the balance of traffic, are the last word in lack of safety devices. Passengers board and alight while the vehicles are in motion and on both sides, regardless of opposing traffic. On the hills they must come to a stop on the level portion of intersecting streets, thereby creating a positive obstacle to free flow of traffic at each intersection. Due to their lack of flexibility of control, there are numerous collisions with vehicles travelling on intersecting streets. These cars are virtually of constant speed type. Their motive power is the steel cable travelling under the street's surface at a constant speed of about nine miles per hour. When the grip is attached to the cable, the car travels at the same speed as the cable, and when coming to a halt, the cable must be lowered and the car brought to a stop by operation of crude mechanical brakes. The record shows a repetition of serious accidents on the cable lines of San Francisco.

A comparison of statistics between cable cars and trolley coaches is extremely enlightening, as follows:

Type Vehicle	Payments for Injuries and Damages-Cost Per Vehicle Mile - Cents	Vehicle Miles Per Accident	Passengers Per Accident	Average Schedule Speed MPH	Total Operating Cost Per Vehicle Mile-Cents	Passenger Seats Per Vehicle
Cable Cars	30.72	745	16,850	5.35	$1.88	29
Trolley Coach	3.78	2,995	24,590	9.71	.48	44

The above table shows certain comparisons between the cable car operation and the trolley coach operation in San Francisco. The trolley coach is the most suitable of the modern types of transit vehicles that may be used to replace the cable cars. The table indicates that trolley coaches are 45% more safe than the cable cars on a "Passengers Carried per Accident" ratio, and that they are over 300% more safe on a "Vehicle Mile per Accident" basis. Both of these comparisons include all accidents involving the respective types of vehicle, whether minor or major in nature.

Column one is the most indicative comparison of the relative safety of these two types of vehicles as it more nearly measures the extent of damage caused by the accidents. This column represents the actual money paid by the Municipal Railway for "Injuries and Damages to Persons and Property." It indicates that the trolley coaches were 710% more safe than the cable cars.

Safety is the most important consideration within economical limitations. However, to this consideration there is added the better performance and lower operating cost of the trolley coach as indicated in Columns four and five respectively. Column four indicates that an 81% higher schedule speed may be obtained with the trolley coach. Column five indicates that the operating cost of the cable cars was 292% greater than the trolley coach. Expanding this latter comparison by multiplying the actual cable car miles operated in the fiscal year of 1947-48, shows that annual operating cost was approximately $650,350 more than if trolley coaches had been operated this same mileage and, as indicated in Column six, these coaches would have provided 51% more seats than the cable cars. The higher speed and the greater seating capacity of the trolley coach insures better service and greater comfort to the passengers.

The records show that an emergency truck is required to go to the aid of the cable cars on an average of three to four times each day to either tow or push the cars or remove disabled or stalled vehicles from the tracks. Each of these cases results in interruption to the service and delays and inconvenience to the passengers.

A special size of rail is required for the cable car lines because the rail supports are of a special design to permit the cable and grip arrangement. On account of the obsolescence of this type of rail, the Railway has been unable to obtain sufficient quantitites of it to maintain the track in a safe condition. This has resulted in many instances of broken rail and it is anticipated that these will continue in increasing numbers as a large percentage of the rails are worn out and are far past their normal condemning limits. Car derailments are both costly and dangerous to both passengers and vehicular traffic. The cost of rolling a small quantity of this rail on a special order would be prohibitive. The obsolescence of cars and cable machinery prohibits a source of supply of repair parts. These must be especially made in the railway shops and the cost is high. The cable cars maintained in the best condition are not as safe as a modern trolley coach and the handicap imposed by the obsolescence of this equipment, which precludes its proper maintenance, emphasizes this difference.

Grades on cable car lines are as follows:

Jackson Line -	Jackson Street between Mason and Taylor	15.8%
	Washington St. between Jones and Taylor	19.8%
Powell Line -	Powell Street between Bush and Pine	17.1%
	Mason Street between Green and Union	17.5%

Modern motor coaches and electric trolley coaches can easily negotiate these grades in a safe and satisfactory manner.

A summary of cable car delays in as follows, based upon the period of January 1 to March 16, 1949.

Cause of Delay	No. of Occurrences	Total Time Delay	Aver. Length of Delay
Cable Stopped	14	614 Min.	43.8 Min.
Derailed Car	35	385	11.0
Slot Brake Jamed in Slot	6	51	8.5
Defective Grip	35	332	9.4
Tight or Obstructed Slot	2	56	28.0
Car Hit Depression Pulley	1	10	10.0
Car Los Cable	10	95	9.5
Defective Brakes and Broken Brake Rigging	8	79	9.8
Forced to Stop by Traffic when Coasting Around Curve	2	20	10.0

The spinning wheel, the oil lamp, the flatiron, the horse car, the Pony Express, all deserve recognition for the worthy part they performed in the progress of civilization. Each made its respective contribution in lessening the hardships, the burdens and inconveniences of mankind, and made possible a greater conservation of his time, the most perishable of his possessions. We have a sincere and deep sentiment for each of these and so that their place in the progress of civilization may be preserved for future generations, exhibits or replicas of each have been carefully placed on display or in the archives of our museums and our progress has moved on.

Surely no just person would insist on spinning wheels being used in our mills if he had to wear the cloth, or oil lamps in our homes with the resulting inconvenience and eyestrain, nor would he wish to ride to and from work by horsecar or wait for mail to be delivered by the Pony Express. There is no more logical reason to preserve the cable cars in regular service.

PART FIVE

CONCLUSIONS AND RECOMMENDATIONS

CHAPTER XVIII

CONCLUSIONS

These conclusions are basic and summarize the many that are contained in the main body of this report together with substantiating material. It is urged that the report be read in its entirety in order that the full measure of understanding of the underlying reasoning can be appreciated. It is, therefore, recommended that the present organization chart be discarded and steps taken to set up a revised organization in accordance with Chart VI attached to the appendix of this report.

ORGANIZATION AND MANAGEMENT

Essentially this proposed organization establishes a three-man Transit Commission with members appointed by the Mayor for terms of six years at a monthly salary of $200. The appointments would be approved by the Board of Supervisors. The Transit Commission should hold policy meetings at least twice monthly for consideration of railway matters. The Manager of Utilities should be eliminated from participation in the transportation organization; similarly all other bureaus presently under jurisdiction of the Public Utilities Commission should be entirely divorced from the transit operation.

There should be an official with the title of General Manager, Municipal Railway, reporting directly to the Transit Commission and vested with complete authority and jurisdiction over all phases of the transportation organization with no interference or participation in the basic functions of the operation from other city departments, bureaus or offices, except to the extent that the best interests of the railway might be served.

The railway should be entirely self-contained as to its purchasing requirements, legal requirements, accounting requirements, and personnel qualification and control.

It is obvious that such an organization will not function properly unless exceptional care is exercised in the establishment of appropriate educational and experience qualifications for the General Manager, particularly, and all responsible heads of departments reporting to him. In establishing the educational requirements, technical qualifications and experience background, specifications of a rigid nature should be adopted and salary brackets established on levels that are comparable to similar positions, authority and responsibility assumed by officials and officers of the transit industry under private operation and elsewhere under municipal administration.

It would not be appropriate or practical to attempt to specify in detail the refinements of individual placement qualifications, responsibilities and coordination of each employee, department head and official of the railway. There are several thousand employees required to maintain the railway in operation. However, in a later section, the more important functions are listed.

This analysis indicates conclusively that by far the greater majority of those individuals each requires separate study for development of his work program and placement upon the organization chart. This is not a process that can be accomplished in a short length of time. It cannot be developed in sufficient time to be reflected in budget appropriations for the coming fiscal year. The estimated saving of between 2 and 2½ million dollars annually can only be realized through the major revisions indicated herein.

Existing deficiencies in service and financial status of the railway consists of many individual items in the various departments and phases of operation, all of

which are due, directly or indirectly, to basic inadequacies of personnel organization and work program. Under no conditions can the property be operated at its maximum degree of efficiency, regardless of the qualifications and background of its officials, without major change in the underlying organizational structure. Overlapping authorities, confusion and delay caused by participation in the railway functions of numerous other unrelated city offices must be eliminated and control for railway operations and management must be centered in a Transit Commission that is entirely removed from political influence, with direct responsibility for conducting the railway's business delegated to a General Manager amply qualified by technical experience and education and with complete and unhindered control in directing its activities.

Under present conditions the status of the property, both physically and financially, cannot be directly attributed to the shortcomings or ineffectiveness of any one person or group of persons, but goes to the cumulative effect of numerous inconsistencies brought about by progressive changes in organization, expansion of properties, restrictive influence of several general city departments and the participation in railway affairs of the several bureaus and departments of the Public Utilities Commission. Actually under present conditions the Manager of Utilities of the Public Utilities Commission assumes the role of what would normally be considered the General Manager of the property. The actual General Manager is such in name only. His functions are restricted, his authority reduced to a minimum and conflicting bureaus and departments have been created to handle certain phases of the railway operation which hinder him from carrying out the functions that should be the responsibility of his office. In addition to these restrictions, some of which are caused by charter provisions and others by ordinance, there are numerous internal deficiencies of organization as to relationships between the various departments of the railway, chain of command, delegation of authority and functional program.

Basic design of the organization chart, as applying to the railway itself is erroneous. In addition to organization and personnel problems, there is a real fundamental obstacle in the lack of strategic location of physical facilities and administrative offices. Effects of the badly disjointed organization are amplified by the widespread location of the different points of control. This condition would be materially improved if proper delegation of authority were in effect at the various locations. However, with such diversified management personnel, under the present system of indefinite jurisdiction and responsibility, the adverse resultant is greatly amplified.

BUDGET CONSIDERATION

With the organization as presently constituted with the existing personnel assignments, to arbitrarily reduce the estimated budget by that amount would probably seriously cripple the operations and service. The revision must be performed on a gradual basis and through careful planning and rearrangement of the various elements discussed herein. If the organization were properly constituted and the General Manager also equipped to do so, it should be possible to demand the reduction in cost of operation and realize the results without serious effect upon service. It stands to reason, however, that for the property to function as it presently functions, the items included in the budget are necessary even though in support of inefficient administration.

The budget estimate is the result of a mechanical process, under present methods of a bureau under separate jurisdiction from the railway. Those persons in responsible charge of railway operations do not participate directly in preparation of the

budget. This is entirely inconsistent with modern business practice. The budget should be prepared completely under supervision of the General Manager of the property. He should weigh estimated costs against estimated revenue and if the balance should not be favorable, it should be his responsibility to take to each department head the problem of effecting the necessary adjustments in their specific financial quotas. It should be his duty to maintain a balanced budget under general approval of the Transit Commission and not necessary for that burden to be carried by the Board of Supervisors who does not normally have complete access to or knowledge of the many and varied functions and interdepartmental activities upon the details of which the multitude of items included in the budget are based.

FACILITIES

Physical facilities are not adequate to satisfactorily perform the service to which the public is entitled in public ownership. Facilities for maintaining passenger-carrying equipment are antiquated in large measure and not suitable for maximum efficiency and economic preservation of investment. The rehabilitation program presently underway does not meet in all respects the most desirable conditions of a well-balanced transportation system designed to fulfill the peculiar requirements of the City of San Francisco. To a considerable measure these defective points in planning have been interjected as a means of circumventing the adverse effects of certain restrictive laws pertaining to San Francisco transit operations.

In this city there is a definite field for large-capacity street cars, smaller capacity electric trolley coaches and motor coaches. In the long-range planning it appears that too much dependence has been placed upon characteristics of operation and design of facilities adopted in other metropolitan areas. This procedure is dangerous in formulating a program for the future transit requirements of San Francisco.

RAPID TRANSIT

There may be a need for a subway rapid transit extension in the heavily congested business section of San Francisco. This need has not, however, been fully substantiated. Review of the trend of transit traffic in this city, the trend of growth in population, the trend of residential development, and expansion, when weighed against the cost of construction of subways and automotive freeways, casts considerable doubt upon the advisability of entering into such a tremendously costly construction program with the consequent financial burden upon the tax paying public.

It appears that in the present program of transit rehabilitation, the balance is being swung too far in favor of small-capacity rubber-tired vehicles. Replacement of antiquated slow and cumbersome street cars on the major trunk lines of the city by modern stream-lined, large-capacity rail cars of the P.C.C. type with light-weight, high-speed, rapid acceleration and deceleration, quiet operation and comfortable seating arrangement, would increase the capacity of existing rail lines by between 25 and 50 per cent. The one principal artery particularly well laid out for satisfactory high-speed modern street car operation is Mission Street where rail service has been abandoned and motor coach operation substituted. The street provides, on the surface, a relatively high-speed transit thoroughfare which under proper conditions of traffic control, synchronized traffic signals, and policing of motorists and no parking regulations, would supply a passenger capacity per hour favorably comparable to a subway at only a fraction of the cost of construction in the way of new tracks and with no disruption of operations, service and general surface traffic that would be necessary in connection with construction of a subway.

In considering the advisability of subway construction, there appears to be one fundamental ingredient that has been overlooked and that is the relatively short distances over which the transit public needs to be carried in this city. It would be well to give serious study to the maps attached to this report upon which have been superimposed concentric distance circles at one-mile intervals. From the foot of Market Street to the most extreme point to the west, the distance is only seven miles on an air line. Subway construction would extend for a distance of not more than three miles to serve the entire area from the Ferry Building to the east portal of Twin Peaks Tunnel. Running time by a well-designed system of surface transportation would give service to the most remote locations within an interval of much less length than is ordinarily encountered on the major subway lines of eastern cities.

It would appear that one of the principal reasons for the short-sighted planning of San Francisco's future transportation facilities is the participation in the development of the system by numerous city departments and bureaus whose qualifications and experience have been in other lines of endeavor than transportation.

ANNUAL SAVING

Under present methods of operation it is estimated that between 2 and 2½ million dollars annually could be eliminated from the present annual cost by rearrangement of organization and improvements in work program through establishing more effective coordination of activities, greater productivity on behalf of existing personnel, and more systematic methods and procedures designed according to modern transit practices rather than procedures developed for application to the industry several decades ago. These economies could be effected through elimination of unnecessary employees, elimination of participation in railway matters by numerous other city departments, proper attention to schedule making by a qualified transportation expert and a well-balanced staff, by elimination of duplicate services, short-lining operations, and proper traffic control. A further material financial improvement could be realized through adoption of one-man car operations which is universal throughout the country and applied not only in small and medium sized cities, but also in the largest cities of the country. The gain which proponents of two-man car operation have made by legislation prohibiting one-man cars is being largely lost through the conversion from street cars to rubber-tired vehicles. It would be more advantageous to the general public, and after all it is the general public with which we are concerned, to eliminate the one-man car ordinance and preserve more of the important rail trunk lines.

CABLE CARS

A further material economy could be effected by removing from the city's legislation the ordinance preserving cable car lines. This type of operation is the most obsolete, dangerous, costly and inefficient of anything found anywhere in the industry. If it is a matter of preserving samples of this early type of operation for its historic value, then it might be well to expend a nominal sum for moving a sample short line to a location where it will not interfere with the general conduct of city traffic, such as Sutro Heights, Coit Tower or some similar location. There is no more justification for preserving the cable car than there is to have preserved a horse car line.

FREEWAYS

As to the proposed construction of freeways which are planned for construction around the periphery of the thickly populated downtown area, reference should also be made to the map to get a true perspective of the distances involved. Such

expenditures within the narrow confines of the city of San Francisco are highly questionable when serious thought and consideration is given to the cost of construction, elimination of useful property from public use, and removing taxable areas from the city's tax roll. This may not be considered as directly pertinent to the transit problem, but on the other hand, anything that is done to expedite traffic of any sort for the movement of passengers within the city by automobile has a direct bearing upon the transit problem.

FARES

As to the matter of fares, there appears to be no justification for considering any further increase above the ten-cent rate now in effect. Actually, based upon the characteristics of traffic, geography and limited confines of the city, together with its extraordinarily high riding habit, the recent increase in fares could probably have been avoided by effecting the improvements in the transit operation itself as pointed out herein.

The total passenger-carrying capacity of Municipal Railway can without question be increased by at least 25 per cent by proper design of facilities, routing, organization and work program. It is quite probable that if the changes recommended herein should be put into effect, a sufficient reduction could be made in costs of operation to permit a reduction in fares rather than an increase.

In this city there is a real possibility of going back to the 5-cent fare, at least on certain special types of operation. There should be established a short-haul 5-cent fare on Market Street on the local shuttle line terminating at the east portal of the Tunnel. For transfer from that line to other connecting lines, a 5-cent transfer could be issued. This would stimulate a great amount of revenue through short-haul riding which has been driven away by the 10-cent fare.

TRANSFERS

Further substantial capture of revenue can be realized through tightening up the free transfer use and procedure. Many thousands of dollars annually are being thrown away by misuse and abuse of transfers and the transfer privilege, much of which, if not all, is directly attributable to shortcomings of management and supervision.

OVERTIME

Large amounts are spent annually on this property in payment of overtime to employees, which could be avoided by proper control and design of work programs, time schedules, and maintenance and operating routine.

CLAIMS

One feature of major cost on this property that is of unjustifiable proportion is the large expenditure of funds annually in connection with accidents, injuries and damages. Careful analysis has been made of this feature of the operation and the results impel the conclusion that a large reduction in annual cost can be brought about. Under present arrangements there are too many departments and offices engaged in processing matters falling within this category. There is too widely diversified interests involved on the part of numerous individuals whose activities are not exclusively to the interest of the railway. Many claims and suits filed against the railway for injuries and damages are justified and can

easily be determined as chargeable to the railway. There are two elements involved. One is the proper defense and prosecution of such cases and the other is the prevention of accidents. The latter, of course, is basic and reflects directly the inadequacies of personnel control and equipment design and maintenance. By establishing the organization and procedure recommended herein, it is estimated that there can be realized a reduction of at least 25 per cent in annual cost of accidents, injuries and damages. There is no effective and well-organized safety program on this property under supervision of a qualified safety engineer. Inspection of facilities at most any location and casual observation of operating practices indicates without question the real need for attention to this important feature. Reference to the photographs appended to this report will supply a small sample of representative conditions throughout the property. Accident statistics as tabulated in the appendix indicate the high rate of accident cost ratio of the cable lines as compared with other phases of the operation.

RECOMMENDATIONS

REVISED ORGANIZATION CHART - RECOMMENDED WORK PROGRAM, PRINCIPAL FUNCTIONS

1. Three members appointed by the Mayor, approved by the Board of Supervisors for terms of six years with one term expiring each two years and subject to removal by Mayor for cause only, with concurrence of Board of Supervisors by 2/3 vote.

2. Salary of Commissioners to be $200.00 per month.

3. Powers and duties to be:

   a. Award contracts for constructions, additions, alterations and other changes due to extensions or changes in service.

   b. Approve plans for new construction, alteration of facilities, or major change in service.

   c. Approve additions or abandonments of service and routing.

   d. Hold public hearings on abandonment, discontinuance, major re-routing of service and contemplated changes in fare structure.

   e. Approve payment of litigated claims.

   f. Make policy as to issuance and use of free passes.

   g. Determine fare structure.

   h. Approve operating budget.

   i. Maintain policy supervision and control through the General Manager.

   j. Appoint and/or remove the General Manager.

GENERAL MANAGER, MUNICIPAL RAILWAY

1. Appointed or removed by Transit Commission.

2. To be exempt from the classified service and all other rules and regulations of the Civil Service Commission and the regulations as to residence.

3. Salary shall be set by the Transit Commission.

4. The general manager shall be appointed on the basis of fitness for the position; in particular, he must possess the qualifications that include, graduate of accredited college or university, and ten years experience of full-time, paid employment in progressively responsible technical and administrative positions in managerial phases of private or governmental passenger transportation systems, involving electric rail and motor coach operations, or, in lieu of educational requirements cited above, two years of accredited college or university and 12 years of experience as above prescribed.

5. The General Manager shall report and be responsible to the Transit Commission and to no other city department, office or commission, and shall have full power to administer the activities and functions of the Municipal Railway within legal limitations of city charter.

6. No other department, office or commissions of the City shall have control over any phase of the Municipal Railway operation, service or facilities.

7. Duties of the General Manager shall be:

a. Supervie, coordinate and be responsible for all activities of all departments of the Municipal Railway.

b. Preside at the regular periodic staff meetings of department heads.

c. Periodically review the budgeting requirements of each department and approve departmental budgets.

d. Establishes disciplinary policy and review disciplinary actions only if submitted by a department head.

e. Responsibile for maintaining operations of the Railway at the highest standards of efficiency and economy in all departments and for maximum utilization of man-power and facilites.

f. Direct and program planning in connection with improvements in operation, service and functioning of the Railway and development for the future.

g. Approve purchase requisitions if not in operating budget.

h. Approves types and kinds of equipment upon recommendation of using department.

CLAIMS DEPARTMENT

General Claims Agent

1. Plan, direct and coordinate the activities of the Claims Department.

2. Review and authorize adjustments and settlements.

3. Decide as to the liability and responsibility on all claims.

4. Recommend settlement of claims to the General Manager.

5. Confer with and receive advice and legal opinions from General Counsel relative to claims and law suits.

6. Review and approve Workmen's Compensation claims.

Accident Investigation Section

1. Investigate all accidents in which Municipal Railway personnel or property is involved.

2. Review and investigate employee statements, regarding the accident; notify department or division head in cases where investigation indicates a different situation than originally stated by employee involved.

3. Interview claimants and witnesses and prepare reports on accidents.

4. Inspect damaged property and supervise photography when necessary.

5. Contact hospital, doctors, nurses, Police Department and others on matters relating to claims.

6. Reinvestigate claims that have become actions at law.

Accident Adjustment Section

1. Investigate losses sustained and expenses incurred through accidents in which Municipal Railway personnel or property is involved.
2. Obtain itemized statements of expenses.
3. Recover damages sustained by Municipal Railway when other party is at fault.
4. Interview and investigate claimants and recommend settlements or adjustments.
5. Adjust and settle minor claims and recommend settlements of major claims.

LEGAL DEPARTMENT

Legal Interpretation Section

1. Examine Charter Amendments pertaining to the Municipal Railway, making reports to the General Manager.
2. Prepare opinions on liability of claims under State Workman's Compensation Act.
3. Prepare opinions on claims filed as to liability.
4. Prepare opinions on all other legal matters pertaining to the Municipal Railway.

Court Case Section

1. Prepare and present cases before courts and commissions.
2. Relocate and interview witnesses when necessary to clarify conflicting statements.
3. Confer with Claims Department to advise on liability.

Contracts Section

1. Prepare and approve all legal documents pertaining to contracts.
2. Give legal advice to all department heads pertaining to contracts.
3. Approve all purchase contracts.

ASSISTANT TO GENERAL MANAGER

1. Act as Administrative Assistant to General Manager.
2. Generally coordinate and supervise office functions of the General Manager's office and coordinate incoming and outgoing materials as well as arrange staff conferences and prepare a record of important transactions.
3. Other duties pertinent to theposition.

RESEARCH DEPARTMENT

Schedule Section

1. Prepare schedules, showing pull-outs, pull-ins, reliefs, layovers, headways, time points, and mileage.
2. Summarize operating hours, reporting on scheduled overtime, range time, relief time and trippers.
3. Study daily reports from Inspectors regarding deviations from schedule; likewise review records of headway recorders.
4. Conduct the necessary field and traffic checks to supply essential data required to intelligently prepare schedules that will fit actual traffic requirements on a continuing basis.

Research Section

1. Analyze all requisitions for schedule changes.
2. Investigate and report on requests for service.
3. Compile data regarding schedules pertaining to number of miles, time points, revenue miles and hours.
4. Analyze traffic demands, report on runs and run changes, and economies of existing runs.
5. Investigate, compile, and report on passenger loads, running time, riding habits, and traffic conditions.
6. Conduct research with respect to fitting service demands into schedules.
7. Prepare statistical data on traffic and passenger checks.

ENGINEERING DEPARTMENT

Chief Engineer

1. Coordinate, plan, direct, and be responsible for all functions and activities of the Electrical Equipment and Ways and Structures Sections.
2. Analyze cost reports and records, budget allotments, and work progress records.
3. Review periodically the personnel and equipment requirements of the departments, submitting requirements to General Manager.
4. Hold regularly scheduled staff meetings of the Section heads within the department.
5. Review disciplinary actions taken by Section Heads.
6. Prepare recommendations for major repairs, alterations, and new construction.
7. Analyze reports on cost and efficiency of the various types of equipment.
8. Recommend types and kinds of equipment for purchase and prepare specifications.

Automotive Equipment Section - Superintendent of Automotive Equipment

1. Responsible for the maintenance, service and repairs for all automotive equipment.
2. Coordinate with stores sub-section on changes or anticipated changes of parts, supplies, or equipment requirements.
3. Responsible for keeping the garages, garage offices, and grounds neat in appearance and orderly in arrangement.
4. Responsible for the discipline and morale within the Section.
5. Responsible for proper proportion of personnel scheduled for the garage units and different work shifts.
6. Responsible for proper record keeping pertaining to cost accounting.

Design and Drafting Section

Perform drawing, charting, mapping, and blueprinting functions for all sections of the Department as directed by the Chief Engineer.

Way and Structures Section

1. Make repairs to roadway and tracks.
2. Clean track and switches
3. Repair switches
4. Inspect track, switches and crossings.
5. Inspect all structures, including offices, shops, car houses, garages, substations and make minor repairs or alterations thereto.

Power and Lines Section

1. Maintenance, repair and inspection of electrical distribution lines, trolley and other appurtenances.
2. Maintenance, repair, service, operation and inspection of electrical substations.

Shops and Car Equipment Section

1. Direct, coordinate and be responsible for the activities and functions of the Section.
2. Supervise, coordinate and control the work of the shops within the Section.
3. Responsible for the maintenance (major repairs), safety and appearance of all equipment except automotive and cable car.
4. Supervise, coordinate and control the work of the car houses within the Section.
5. Responsible for the daily and periodic inspection, minor repairs, and cleaning of all cars.
6. Prepare accurate time records designed to show cost of various detailed functions.

Inspection - Chief Inspector

1. As directed by the Superintendent of Shops and Car Equipment, inspect equipment, supplies and materials received against specifications.
2. Inspect work performed by the various shops and car houses.

TRANSPORTATION DEPARTMENT

General Superintendent of Transportation

1. Plan, direct, coordinate and be responsible for all activities and functions of the Transportation Department.
2. Approve operating policies and changes in operating procedure.
3. Cooperate with Research and Schedule Department relative to necessity for schedule changes and adjustments.
4. Review operating reports and determine the operating efficiency of the various Sections and Divisions.
5. Conduct regularly scheduled staff meetings of Section Supervisors and Division Superintendents.
6. Make decisions on operating problems and distribution of personnel and equipment
7. Recommend methods to increase or improve service and to increase revenue.
8. Initiate and recommend extensions and abandonments of service.
9. Review and evaluate on-the-job training and follow-up training programs.

Rail and Trolley Coach Section and Motor Coach Section - Superintendents

1. Coordinate and direct the activities of all divisions.
2. Analyze, investigate and recommend on the personnel requirements and operating policies.
3. Administer departmental policy and operating changes.
4. Make special investigations on route changes, extension of service, location of stops and other operating practices when directed.
5. Review reports on condition of equipment and coordinate same with Equipment Section.
6. Check the work of operating personnel.
7. Make reports to General Superintendent on efficiency of the training program.
8. Review disciplinary action taken by Division Superintendents.

Divisions - Division Superintendents

1. Direct and operate and be responsible for all the activities of a division including the operation of equipment and the service originating at that division.
2. Assign operators to schedules in accordance with seniority rules.
3. Issue equipment and information to operators, including vehicles, fare boxes, schedules, working funds, and any special instructions or information.
4. Report on the condition of equipment to Equipment Section.
5. Inspect operations to ascertain that schedules are maintained and equipment properly operated.
6. Receive accident reports and forward to Claims Department. Discipline operators after accidents, if accident is fault of operator.
7. Discipline operators for violations of rules and regulations.
8. Recommend dismissal of employees.
9. Maintain records of equipment and schedules operated, accidents, complaints and others as required.
10. Label all lost property with information as to line, run and operator and send to Lost Property Section.
11. Survey and analyze present service, making recommendations to improve service.
12. Investigate service complaints, taking appropriate action, and sending the results to Public Relations Department.

Central Control and Field Inspection Units

1. Operate the two-way radio station and keep a log of all radio calls and emergency reports.
2. Advise and instruct operators on procedure to follow in case of emergencies and delays.
3. Relay emergency information to Line Inspectors.
4. Notify and dispatch service and emergency crews.
5. In the field check of actual running operations against schedules.
6. Make correction of operators who violate operating rules and regulations.
7. Make reports to Division Superintendent on operators who violate operating rules and regulations.
8. Liaison with police and other city departments regarding parades, celebrations, athletic events, parking restrictions, routes, and stops.
9. Dispatch and direct special or extra service.

Training Section

1. Conduct on-the-job training for motormen, conductors, motor coach operators, trackless trolley operators and cable car operators if retained.
2. Assign operators who pass the initial training to divisions.
3. Recommend for release, operators who fail the initial training.

3. Receive and schedule distribution of gasoline, oils, and lubricants to the sub-stores.

4. Check and approve and send requisitions to Purchasing Section on items not carried in stock or below the minimum inventory quota.

5. Maintain a perpetual inventory on all supplies, materials and equipment carried in stock, post items delivered and received and make periodic physical inventories.

6. Make receiving slips on all receipts, check packing slip against purchase order.

7. Inspect all materials received, request technical assistance, when needed, from the using department.

8. Store and maintain office supplies and deliver them to departments monthly upon requisition.

9. Store construction materials, including sand, rail, lumber, poles, wire, paint and construction tools and equipment.

Sub-Stores

1. Issue parts and materials to mechanics in exchange for used parts and materials.

2. Issue and receive tools, when required, from employees.

3. Maintain a working supply of supplies, materials and equipment as established by minimum inventory quotas.

4. Store all items in stock in a uniform and easily accessible manner.

5. Coordinate activities and functions with volume of maintenance work and recommend changes in inventory levles.

Salvage Unit

1. Inspection and collection of scrap, obsolete and used materials, supplies and equipment.

2. Sorting of scrap and salvage items and determining what to sell and what to re-use.

3. Scheduling salvage items for repair or processing, returning such items to the stores section.

4. Collecting and disposing of all rubbish and scrap from all shops, car houses, and other locations of the Municipal Railway.

5. Notify Purchasing Section of amount and kind of scrap so that bids may be received for its sale.

6. Consult with department heads on possible use of scrap and obsolete materials and the reclaiming of salvage materials and equipment.

Duplicating Unit

1. Provide mimeograph and duplicating service for all departments, sections and units of the railway.

2. Report and recommend to Chief Auditor requests for mimeographing or duplicating which are excessive in number of copies or unnecessary in the overall efficiency of the railway.

PERSONNEL AND TRAINING DEPARTMENT

Director of Personnel and Training

1. Plan and direct and be responsible for all activities and functions of the Personnel and Training Department, including safety, accident prevention, orientation training, personnel processing, personnel records, and employee health and welfare.

2. Make studies and recommendations pertaining to departmental organization.

3. Administer the provisions of the Charter and the Civil Service Rules and Regulations pertaining to personnel policy.
4. Initiate and carry out personnel policy.
5. Analyze the departmental personnel requirements quarterly, making recommendations for increases or decreases to the General Manager

Personnel Processing and Records Section

1. Analyze departmental organization and personnel requirements.
2. Make personnel audits and recommend proper utilization of personnel.
3. Keep an organization control file by positions.
4. Coordinate personnel activities with the Civil Service Commission.
5. Make requisitions for personnel.
6. Prepare reports on labor turn-over, length of service of employees, age of employees, and other reports pertaining to personnel activities.
7. Hold an exit interview with all employees separating from the service.
8. Administer the service rating system.
9. Obtain all personal record information for use in preparing personnel history cards.
10. Issue manual of policy and rules and information.
11. Issue necessary equipment.
12. Process separations, including holding an exit interview.
13. Prepare monthly reports on additions, separations and other personnel activities when requested.
14. Maintain a master personnel record file for each employee which will include record of service, changes in status, leave record, training record, service rating, and personal history.
15. Set up a personnel card with the assistance of the tabulating section which will provide statistical data pertaining to the personnel or personnel activities.
16. In accordance with established policy, release personnel information to employees, other departments or agencies.

Training Section

1. Approve and assist in the planning of all training programs.
2. Be responsible for the orientation training of all new employees.
3. Investigate training programs for conformity with policy, approve techniques of training, and evaluate such training programs, making recommendations to Director of Personnel.
4. Assist Safety Engineer in the development of accident prevention and safety programs.
5. Procure training supplies and aids for use by other department heads in their training programs.
6. Give technical training assistance to department heads.
7. Prepare and administer a supervisory development training program.
8. Introduce the new employee to the Municipal Railway, its plan for organization, its purposes and objectives, its history, its rules and regulations.
9. Introduce the new employee to his supervisor.

Safety Section

1. Formulate and prepare accident prevention and safety programs.
2. Inspection to ascertain that accident prevention and safety programs are being actively carried out, reporting the results of such inspections to the Director of Personnel.
3. Receive reports of all accidents, both transit and industrial.
4. Prepare reports on types and kinds of accidents.
5. Devise ways to reduce accidents, consult with department heads on accident prevention and safety, recommend special instruction or follow-up for employees with a high accident rate.

6. Make investigations and recommendations pertaining to route hazards.
7. Check and evaluate the safety instruction given to new platform men or coach operators.
8. Investigate operations in the garages, car houses, and shops and recommend safety installations.
9. Maintain, actual clerical work performed by tabulating section, a master card including all accident information, such as, location, type, kind, and employee involved.

Medical and Welfare Section

1. Recommend to the Civil Service Commission medical standards for the various classifications in the Municipal Railway.
2. Examine employees absent sick before allowing them to return to work, approve payment of sick leave time in cases of absence in excess of 5 days.
3. When requested by department or division heads, investigate absenteeism.
4. Investigate working conditions and make recommendations for changes or improvements.
5. Make reports on employee absenteeism by department and by classification.
6. Assist in the counseling of employees.

PUBLIC SERVICE DEPARTMENT

Director Public Service

1. Initiate, plan and conduct programs to improve relations with the public.
2. Make surveys and reports on public opinion preference regarding transportation facilities and equipment.
3. Prepare and release information for newspaper and radio use.
4. Explain Municipal Railway objectives, plans and policies by speaking before public gatherings, clubs and other private organizations.

Publications Section

1. Gather, compile and edit material for the annual reports.
2. Gather, compile and edit material for any special reports or publications.
3. Prepare and publish and distribute the employee publication, "Trolley Topics."
4. Operate and maintain for all departments photographic service.
5. Edit, print and turn over to Division Superintendents for distribution in street cars and coaches, notices to the public, to be over signature of General Manager.

Complaints Section

1. Receive by telephone or mail all complaints regarding service or employees.
2. Answer all complaints either by telephone or letter after the complaints have been investigated by the proper operating department or division.
3. Make monthly reports on types and kinds of complaints received.

Lost Property Section

1. Receive daily from Division Dispatchers all lost and found articles, keeping same for sixty days.
2. Answer telephone inquiries from the public in connection with lost articles.
3. Return lost articles to the public.
4. Maintain statistical records on number and kind of articles lost and returned.
5. After sixty days, return lost articles to employees who originally found them.

Telephones and Switch Boards

1. Receive all incoming telephone calls, routing them to proper department, section or unit.

2. Handle all local calls through the central switchboard.

Information Section

1. Give to the public by phone or letter, when requested, information regarding schedules, transfers and other general information.

2. Answer letters of commendation, prepare letter of commendation for General Manager's signature.

3. Provide messenger and pick-up service for transmitting inter-office and inter-city correspondence and communications.

4. Receive, sort and deliver and pick up all mail on a regular schedule.

FUNCTIONAL RECOMMENDATIONS

1. All sections of the Charter, ordinances or other legal requirements delegating control of Municipal Railway in part or in whole to the Public Utilities Commission, the Manager of Utilities, or any other bureau under jurisdiction of the Public Utilities Commission, be amended to exclude such control, except that the Civil Service Commission should continue to function as personnel procurement agency.

2. A Transit Commission be created to consist of three members appointed by the Mayor to serve at annual salaries of $2,400 and to be removable from office upon two-thirds vote of the Board of Supervisors.

3. A General Manager of the Municipal Railway be appointed by the Transit Commission, and approved by the Mayor, selected on basis of rigid education and experience requirements without residence restriction.

4. Vest in the General Manager full authority and responsibility for conducting Municipal Railway operations in their entirety, subject to general approval of the Commission.

5. Such departments, sections, units and offices as required to meet all necessary functions of the railway as a self-sufficient entity, be created to the extent that they do not already exist, in accordance with Recommended Organization Chart VI of the appendix, and in substantial accord with the work program as outlined in the previous section of this chapter.

6. Reconstruct Geary Division building so as to provide sufficient office space for all general administrative offices as a means of eliminating the lack of coordination and the inefficient work flow presently existing due to widely separated functional offices.

7. Establish regular General Manager's staff meetings on a weekly basis to include all department heads.

8. Eliminate the present Accident Prevention Committee and assign responsibility of charging accidents to Superintendents of Operating Divisions.

9. Establish a Safety Committee consisting of the Safety Engineer, a Division Superintendent, two full-time street car or coach operators and a Section Supervisor from the Engineering Department. Except for the Safety Engineer, members should be rotated periodically.

10. Establish a Training Section in the Personnel and Training Department including an orientation program.

11. Establish a Foreman and Sub-Foreman training program in the Engineering Department

12. Training personnel, now assigned to the Training Department for training and follow-up of platform personnel, be transferred to a Training Section under the Transportation Department.

13. Reduce the number of personnel in the Training Section from 26 to 14, assign four employees to a pool for all initial job training, such as, equipment operators, and ten men to a systematic follow-up training of all platform and operating employees.

14. Abolish the present policy of follow-up on every employee involved in an accident.

15. Abolish the present follow-up form and substitute a simple form which will also provide a job performance rating.

16. Re-establish the practice of preparing manuals to cover the various jobs.

17. The Senior Claims Investigator and three Claims Investigators be utilized by the Claims Department rather than by the City Attorney.

18. Assign new office space to the Claims Department with no private offices except for the Claims Agent; provide cubicles for interviewing purposes.

19. Establish a central file for all claims and claims records and assign the responsibility for all records to one Senior Clerk.

20. Purchase and assign to the Claims Department five cars equipped with radio.

21. Prepare a training program for Dispatchers to cover their duties and responsibilities.

22. Amend Charter to allow claimants to file claims at the General Office, Municipal Railway.

23. Allow General Claims Agent to settle claims up to $1,000, drawing checks against a claim revolving fund.

24. Abolish present circuitous system of obtaining warrants. Procedure should be: (a) approval of amount of settlement by General Claims Agent and General Manager; (b) release signed by claimant; and (c) sent to Director of Finance and allow three days to get warrant in mail to claimant.

25. Establish for the General Claims Agent a yearly revolving fund of $2,500 to cover unusual expenditures in connection with claims investigation, with signed receipts not necessary to obtain payment.

26. Assign the photographer, now on the Municipal Railway payroll but stationed at the Water Department, to the Claims Department.

27. Assign to the Claims Department, for use by investigators, at least four cameras.

28. The head of the Safety Section be a Safety Engineer experienced in the field of transportation and devoting full time duties to this function, not only as it pertains to operating personnel in the field, but also shop personnel and industrial accidents.

29. The Safety Section be a section of the Personnel and Training Department.

30. The follow-up of accident prone employees and the additional training of employees involved in accidents be the responsibility of the Chief Instructor who reports to the General Superintendent of Transportation or the appropriate department head.

31. The statistical and clerical work involved in the Accident Prevention Section be handled by a statistician rather than by an Inspector.

32. Transfer three Inspectors now assigned to this work to other departments or sections.

33. The Civil Service Commission bring up to date the various classes of positions applying to the railway.

34. In addition to the physical requirements and the written test, as part of the examining process for motormen and conductors, a rigid physical and athletic test should be included in examining process.

35. The Civil Service Commission draft duties and responsibilities for all new positions recommended based upon the functional organization chart plus determining minimum education and experience requirements of the new positions.

36. (a) Professional transportation class group be established; (b) Minimum educational and experience requirements be established as a basis for entrance to examinations in this professional class group; (c) Hereafter an open and promotional examination be held simultaneously for the various levels in the professional class and that currently employed personnel be allowed to participate in the examination only if they meet the minimum requirements established for the class involved; (d) In determining the minimum education and experience requirements for the various classes of positions, the Civil Service Commission utilize the services of one or more consultants from the field of mass passenger transportation; (e) Examinations to fill the professional transportation group include a grade on education and experience, an oral examination, and a written examination, with the first two being weighted heavily. As an example, the recommended administration of the system for the Transportation Department is as follows:

(1) Open examinations to fill positions of conductor, motorman and coach operator.
(2) Promotion examinations to fill positions of Inspector, Dispatcher, Instructor, and Senior Inspector.
(3) Open and promotion examinations to fill position of General Superintendent of Transportation, Transportation Superintendent, Chief Instructor, Chief Inspector, Supervisor of Schedules, and Division Superintendents.

37. Appointments to positions on scales as follows:

(a) Chief Engineer or Manager of Engineering
(1) Unassembled examination
(2) Waive residence requirement
(3) Weigh examination
600 points - evaluation of education and experience
400 points - oral examination.
(4) Salary Schedule - $1,000 to $1,250 per month.

(b) Director of Personnel and Training
(1) Open examination
(2) Waive residence requirement
(3) Weigh examination
300 points - written test
400 points - evaluation of education and experience
300 points - oral examination
(4) Salary Schedule - $800 to $1,000 per month.

(c) Director of Finance
(1) Open examination
(2) Waive residence requirement
(3) Weigh examination
400 points - written test
300 points - evaluation of education and experience
300 points - oral examination
(4) Salary Schedule - $900 to $1,100 per month.

(d) Director of Public Service
(1) Open examination
(2) Waive residence requirement
(3) Weigh examination
300 points - written test
400 points - evaluation of education and experience
300 points - oral examination
(4) Salary Schedule - $700 to $900 per month

(e) Claims Agent
(1) Open examination
(2) Waive residence requirement
(3) Weigh examination
300 points - written test
400 points - evaluation of education and experience
300 points - oral examination
(4) Salary Schedule - $800 to $1,000 per month.

(f) Legal Counsel
(1) Unassembled examination
(2) Waive residence requirement
(3) Weigh examination
600 points - evaluation of education and experience
400 points - oral examination
(4) Salary Schedule - $1,000 to $1,250 per month.

(g) Director of Research
(1) Open examination
(2) Waive residence requirement
(3) Weigh examination
400 points - written test
300 points - evaluation of education and experience
300 points - oral examination
(4) Salary Schedule - $600 to $800 per month.

38. A Transportation Superintendent of Rail and Trolley Coach Operations and a Transportation Superintendent of Motor Coach Operations, both reporting to the General Superintendent of Transportation, with Division Superintendents reporting to them.

39. Establish a disciplinary policy pertaining to violations by platform personnel and allow the Division Superintendents full authority to administer disciplinary measures on a systematic basis within the bounds of this policy.

40. Establish a disciplinary control policy for Line Inspectors to make on-the-spot corrections of violations.

41. Every Inspector turning in an Inspector's Report pertaining to a personnel violation include on his Report the line, run number, and the car number, and, if convenient, the operator's name and cap number.

42. Abolish the "Daily Record of Mileage, Hours, etc. - Cars", the mimeographed summary of individual accident report form and the Superintendent's Disciplinary Report.

43. Establish an active line of communication between the Claims Department and the Division Superintendents to provide them with accident investigation material and allow them to take necessary action in connection with reviewing accidents originating within their respective divisions.

44. Establish a Training Department follow-up form which will be objective in nature and provide for a detailed rating of job factors.

45. The present Equipment Department be revised to conform with Organization Chart VI. Transportation equipment, tracks, overhead, shops, shop equipment and other required facilities are a specialized field of engineering. For this work to be done effectively and efficiently requires not only extensive experience in the field of transportation, but also a thorough knowledge of the actual operating problems and requirements at hand of the particular operating company involved.

46. Wage rates and bonuses should be adjusted to be comparable to the respective classification paid by other transit operators in the general area.

47. Proper instruction and discipline should be effected to reduce excessive equipment abuse by operators.

47. Replace the obsolete street cars that will indefinitely be required for rail operation.

50. Abandon the antiquated cable cars and substitute modern trolley coaches as early as practicable.

51. Retain only those units of service rail cars that are actually necessary to present operations.

52. Reduce number of trucks used by the track department and obtain modern electric line tower trucks and abandon all obsolete trucks and replace them with new ones as early as practicable.

53. Carefully plan, build and equip new and remodeled shops, garages and car houses to permit efficient service and maintenance operations.

54. Increase discipline and instruction of the rolling stock operators to minimize the abuse of equipment.

55. Reorganize the Equipment Section to provide a sound and sufficient supervisory force to ensure effective direction and economic operation of the working personnel.

56. Transfer the Track Department to the Engineering Department with designation of Ways and Structures Section to reduce the span of control of the General Manager as well as place all similar and related functions under the direct control and supervision of Chief Engineer.

57. Create the position, Superintendent of Ways and Structures to head this section.

58. Institute a system to provide for a periodic check of all track.

59. Utilize a standard departmental personnel card.

60. Analyze monthly the personnel requirements of this department. The number allowed (143) in the proposed 1949-50 budget appears excessive based on the work requirements of the department.

61. Transfer the two chauffeurs in the Track Equipment and Materials Section to the Accounting Section.

62. Debris, paper and trash be removed more often from the tunnels.

63. A copy of the daily force report be reviewed by the Chief Engineer.

64. More emphasis be placed on keeping stations in a neat, clean and freshly painted condition.

65. If the track equipment and materials were housed at some other location, the full-time use of trackmen for watchman could be abolished, thus effecting economies in personnel as well as premium payments for overtime.

66. The name of the Equipment and Overhead Lines Department be changed to Engineering Department and the positions of Superintendent of Equipment and Overhead Lines and Superintendent of Equipment be abolished and the duties and responsibilities of the two positions be consolidated and made a part of the scope of a new position titled Chief Engineer or Manager of Engineering.

67. A new section titled, Design and Drafting, be established as part of the Engineering Department.

68. The present sections Overhead Lines and Motive Power be made units of a new section, Electric Power and Lines.

69. The positions of Electric Foreman and General Foreman be abolished and their duties and responsibilities be included in the position titled Superintendent of Electric Power and Lines.

70. Direct control relationship of the Superintendent of Automotive Equipment to subordinates be limited to six, namely:

(a) Garage Foreman, Automotive Equipment - Ocean Garage
(b) Garage Foremen, Automotive Equipment - Utah Garage
(c) Garage Sub-Foreman, Automotive Equipment - McAllister Garage
(d) Garage Sub-Foreman, Automotive Equipment - Auto and Truck unit.
(e) Senior Combination Mechanic - Emergency Station
(f) Head Clerk.

71. The direct control relationship of the Superintendent of Shops and Car Equipment to subordinates be established at five, namely:

(a) General Foreman of Shops
(b) General Foreman of Car Houses
(c) Chief Inspector, Shops and Equipment
(d) Superintendent of Cable Cars and Machinery
(e) Head Clerk

72. A new unit titled Inspection be established as part of the Shops and Car Equipment Section.

73. Establish definite lunch period for employees of the second and third shifts on staggered basis so as to provide for employees being on duty at all times in the event of an emergency.

74. Install and use time clocks at all garages, car houses, and shops.

75. One Head Clerk or Senior Clerk be assigned to the Automotive Equipment Section, to the Ways and Structures Section, the Power and Lines Section and the Shops and Car Equipment Section.

76. For proper assignment of responsibilities in this department and its sections and units, prepare procedure manual that is specific, clearly stated, and fully understood.

77. Regularly scheduled periodic staff meetings be held by the Chief Engineer.

78. The proposed plan of trolley coach operation at Geary Division should be discarded and, if possible, another location selected. On account of the physical disadvantages, including the necessity of heavy grading of the proposed storage yard and the costly remodeling of the lower car house for shop use, this place is unsuited for a trolley coach operation. If it is economically impracticable to obtain another suitable location, it is recommended that the following general plan be considered.

Coaches enter the yard from Presidio Avenue at the northeast corner, proceed west by one of four lanes over safety inspection pits of two-coach capacity each, with a two-sided shed constructed over the pits. They would then make a left turn and proceed south to the parking lane entrances, turning left into the parking lanes.

If a coach requires washing, it may be operated through the washer over a line parallel to and west of the above line from which the parking lanes are entered. After being washed, it may re-enter this latter line and be parked in any of the 15 parking lanes north of this position and which have a total capacity of 60 coaches.

A coach may continue south and enter the repair shop building and the mileage inspection pit positions in the remodeled car house or a parking position near the Tire Room for tire change. The repair shop building would be arranged with two pits in tandem in three lanes and an adjacent line of travel would parallel each of the three-pit lanes. The tandem pits would be spaced approximately 80 feet apart, which would permit a coach standing over any pit position, to be by-passed. Only those coaches requiring repairs, tire change and a mileage inspection would have to re-enter Presidio Avenue to be parked. This is a relatively small group of coaches as compared to the total division operation, and since most of this movement would occur during the day in off-peak periods, there would be a minimum interference of coach movements within the storage yard and repair shop. The coaches leaving the repair shop would be operated east on Post Street to Lyon Street, north to Sutter and return to the storage yard. At present Bush Street becomes a one-way eastbound street at Presidio Avenue. If the commencement of one-way operation on Bush Street would be moved one block east, the operation would be somewhat simplified. If it is impossible to make this change, it still appears feasible to adopt this plan by using Sutter Street instead of Bush Street.

It is realized that the cost of overhead construction for this plan may be higher than that of the present railway plan. However, the operating advantages will easily justify this higher cost.

It is further recommended that if the trolley coaches are to be operated from this location that the Transportation offices and trainmen quarters be moved into the space now occupied by the Drafting Room which is immediately above the proposed repair shop. This will be much more convenient to the parking area than are the present quarters.

79. If the proposed location of the new Elkton shop provides an insufficient amount of space to permit adequate provisions for its efficient operation, careful consideration should be given to other locations that would give sufficient space and would be nearer to the center of the railway system.

It is suggested that consideration be given to the present McAllister garage location with the possibility of purchasing the areas now occupied by frame houses along the east line of this property and the service station at the northwest corner. If this property could be obtained, a complete block could be devoted to the shops, giving a much larger area than that now proposed. Since this property is located on a slight hillside and most of it has already been graded to a level at the lowest point of the property, it would be particularly adaptable for a two-level construction. The fact that it is not adjacent to any steam railroad facilities is not too serious a problem as most materials and equipment are now handled by motor trucks.

Access to this property by street car rail can be obtained much more economically than the proposed cost of $475,000 for rehabilitating the Ocean rail line.

80. A plan should be placed in effect for continuous inspection of the overhead lines so that the entire system would be complete covered at least every three months and weaknesses spotted and repairs made before actual breakdowns occur and an emergency crew capable of making overhead repairs should be kept on 24-hour duty daily to protect the distribution system.

81. A storeroom should be provided for the Overhead Line Section and all materials that are not carried to the work by trucks should be kept under jurisdiction of a storekeeper, whether new or secondhand

82. A checkup should be made of all old materials and line equipment parts that are now stored in the building at Turk and Webster, and those that are old and obsolete should be disposed of. The usable parts should be inventoried and placed in the storeroom stock in the proper classifications.

83. An adequate block signal system should be installed in the Twin Peaks Tunnel immediately and operating rules pertaining to this operation strictly enforced.

84. All facilities should be given an exhaustive housecleaning and all scrap metal disposed of and grounds and buildings maintained in a neat and orderly condition at all times.

85. Adequate fire-fighting equipment should be provided at all facilities and existing fire equipment and appurtenances should be tested periodically to ensure proper condition and sufficient protection.

86. At the earliest date the recommendations contained herein can be effected, give consideration to fare adjustments and establishment of special rates.

87. Establish in the Police Department, or as a separate Municipal Unit, a Traffic Engineering Department headed by a technically qualified traffic engineer with specified years of experience.

88. Immediately commence replacement of antiquated traffic control signals on Market Street for completion at the earliest possible date, and also extend program to Mission Street.

89. Tighten up on Police enforcement of no-parking and double-parking regulations which are now badly abused.

90. In considering the elements of travel time reduction by Rapid Transit as compared with surface lines, as listed on Page III-17 of the DeLeuw report, keep in mind that the times shown for present operation can be greatly reduced by proper traffic control and use of modern P.C.C. type rail cars in replacement of present obxolete street cars.

ARTHUR C. JENKINS

APPENDIX

Maps, Tables and Charts listed in Table of Contents

MUNICIPAL RAILWAY OF SAN FRANCISCO

MOTOR COACH ROUTES

(RAIL LINES ON SEPARATE MAP)

FEBRUARY 1, 1949

ARTHUR C. JENKINS
CONSULTING ENGINEER

LEGEND

- (75) ROUTE DESIGNATIONS
- TERMINUS OF ROUTE
- MOTOR COACH DIVISIONS
- (26E) EXPRESS ROUTES

SCALE IN FEET 0 1000 2000 3000 4000 5000

PACIFIC OCEAN

SAN FRANCISCO BAY

PRESIDIO
U.S. MILITARY RESERVATION

GOLDEN GATE PARK

LINCOLN PARK
PALACE OF THE LEGION OF HONOR

GOLDEN GATE BRIDGE

FISHERMAN'S WHARF

S.F.-OAKLAND BAY BRIDGE

FERRY LOOP

HUNTERS POINT

U.S. MILITARY RESERVATION FORT FUNSTON

LAGUNA DE LA MERCED

DALY CITY

1 MILE
2 MILES
3 MILES
4 MILES
5 MILES
6 MILES
7 MILES

MAP № II

MUNICIPAL RAILWAY OF SAN FRANCISCO

STREET CAR AND TROLLEY COACH ROUTES

(MOTOR COACH ROUTES ON SEPARATE MAP)

FEBRUARY 1, 1949

ARTHUR G. JENKINS
CONSULTING ENGINEER

INSET SHOWING BRIDGE TERMINAL & FERRY LOOP

SCALE IN FEET 0 1000 2000 3000 4000 5000

LEGEND

TROLLEY COACH LINES - [illegible] - 41
SUB STATIONS - MUNICIPAL RAILWAY
SUB STATIONS - P G & E CO.
OPERATIVE FACILITIES
CROSS OVERS - RAIL

PACIFIC OCEAN
SAN FRANCISCO BAY
GOLDEN GATE BRIDGE
S.F.-OAKLAND BAY BRIDGE
PRESIDIO
U.S. MILITARY RESERVATION
GOLDEN GATE PARK
FORT MASON
AQUATIC PARK
KIRKLAND STORAGE YARD
CABLE CAR HOUSE
FERRY BUILDING
SEE INSET FOR DETAILS
MARKET ST
BRIDGE TERMINAL
S.P. DEPOT
CHINA BASIN
CENTRAL BASIN
TRACK & LINE AND POWER DEPTS.
TURK ST. CAR HOUSE
McALLISTER DIVISION BUS
GEARY DIVISION RAIL
SUTRO DIVISION RAIL
SUTRO DEPOT
POTRERO DIVISION TROLLEY COACH
24TH & UTAH GARAGE AND DIVISION BUS
BRYANT STORE No. 1
SUNSET TUNNEL
TWIN PEAKS TUNNEL
1 MILE
2 MILES
3 MILES
4 MILES
5 MILES
6 MILES
7 MILES
CALIFORNIA ST
CLEMENT ST
GEARY ST
BALBOA ST
JUDAH ST
IRVING ST
TARAVAL ST
WEST PORTAL AVE
ULLOA AVE
ST FRANCIS CIRCLE
OCEAN AVE
GENERAL SHOP
GENEVA DIVISION RAIL
TRACK AND LINE STORAGE
OCEAN AVE. GARAGE AND DIVISION BUS
ONONDAGA AV.
RANDOLPH ST
BROAD ST
PLYMOUTH
WORCHESTER AV
JUNIPERO SERRA BLVD
LAGUNA DE LA MERCED
US MILITARY RESERVATION FORT FUNSTON
MUNICIPAL POOL
LA PLAYA
45TH AVE
33RD AV
30TH AVE
19TH AVE
9TH AVE
7TH AVE
6TH AVE
2ND AVE
PARKER AVE
FUNSTON
STANYAN ST
FILLMORE
VAN NESS AVE
MASON
TAYLOR
JONES
LEAVENWORTH
HYDE
LARKIN
POLK
VAN NESS
FRANKLIN
GOUGH
OCTAVIA
LAGUNA
BUCHANAN
WEBSTER
FILLMORE
STEINER ST
BAKER ST
PRESIDIO AVE
SCOTT ST
PRESIDIO
BAY ST
CHESTNUT ST
NORTH POINT ST
GREENWICH ST
UNION ST
BROADWAY
COLUMBUS AVE
STOCKTON ST
SUTTER ST
POST ST
GEARY ST
O'FARRELL ST
EDDY ST
ELLIS ST
TURK
MARKET
MISSION
HOWARD
FOLSOM ST
HARRISON ST
BRYANT
BRANNAN
TOWNSEND
KING
BERRY
4TH ST
5TH ST
6TH ST
7TH ST
8TH ST
9TH ST
10TH ST
11TH ST
13TH ST
14TH ST
15TH ST
16TH ST
17TH ST
18TH ST
20TH ST
22ND ST
23RD ST
26TH ST
30TH ST
CHURCH ST
SO VAN NESS AVE
POTRERO AVE
CARL ST
CLAYTON ST
ARMY ST
BAY SHORE BLVD
SAN BRUNO AVE
WAYLAND ST
3RD ST
HUNTERS POINT
CLAY
WASHINGTON
JACKSON
PINE
BUSH
SUTTER
POST
GEARY
O'FARRELL
EDDY
ELLIS
TURK
MARKET
MISSION
HOWARD
FOLSOM
HARRISON
BRYANT
BRANNAN
TOWNSEND
KING
BERRY
4TH
5TH
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CHURCH
SO VAN NESS
POTRERO
CARL
CLAYTON
ARMY
BAY SHORE BLVD
SAN BRUNO AVE
WAYLAND
3RD
HUNTERS POINT
CALIFORNIA
PINE
BUSH
SUTTER
POST
GEARY
O'FARRELL
EDDY
ELLIS
TURK
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SO VAN NESS
POTRERO
CARL
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ARMY
BAY SHORE BLVD
SAN BRUNO AVE
WAYLAND
3RD
HUNTERS POINT
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WASHINGTON
JACKSON
PINE
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EDDY
ELLIS
TURK
MARKET
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30TH
CHURCH
SO VAN NESS
POTRERO
CARL
CLAYTON
ARMY
BAY SHORE BLVD
SAN BRUNO AVE
WAYLAND
3RD
HUNTERS POINT

TRANSPORTATION MAP OF THE CITY & COUNTY OF SAN FRANCISCO

JUNE, 1942

PRIOR TO CONSOLIDATION

SCALE

LEGEND

- MUNICIPAL RAILWAY DOUBLE TRACK
- " " SINGLE "
- " " MOTOR BUS
- MARKET ST RY. CO DOUBLE TRACK
- " " SINGLE TRACK
- " " OPERATED BY CABLE
- " " MOTOR BUS
- CALIF ST CABLE RY DOUBLE TRACK
- JOINT MUNIC & MARKET ST RY. OPERATION
- MUNIC. RY ELECTRIC SUB-STATION
- MRKT. ST. "
- MUNIC. RY PROPERTY
- MRKT ST RY. "
- MARKET ST. RAILWAY TROLLEY BUS
- MUNICIPAL RAILWAY TROLLEY BUS
- JITNEY BUSES
- NONOPERATIVE MARKET ST RY PROPERTY

PACIFIC OCEAN

PRESIDIO
U S MILITARY RESERVATION

LINCOLN PARK
FORT MILEY
U S MILITARY RESERVATION

GOLDEN GATE PARK

PARK PRESIDIO DISTRICT

WESTERN ADDITION

NORTH BEACH

BAY OF SAN FRANCISCO

MISSION DISTRICT

POTRERO

HUNTERS POINT

SUNSET DISTRICT

PARKSIDE

FOREST HILL

MT SUTRO

ST FRANCIS WOOD

WEST WOOD PARK

INGLESIDE

LAGUNA HONDA

TWIN PEAKS

MT DAVIDSON

LAGUNA DE LA MERCED

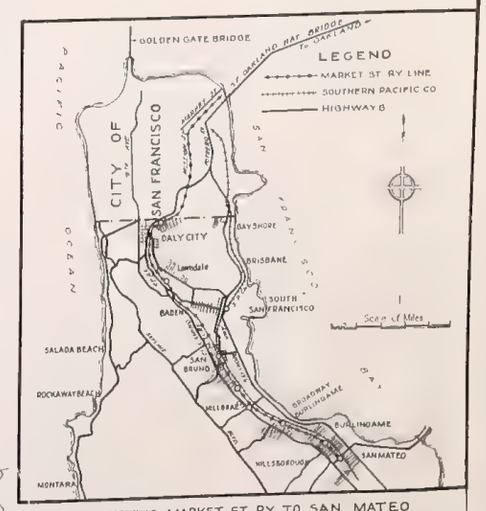
RANCHO LAGUNA DE LA MERCED

U S MILITARY RESERVATION FORT FUNSTON

SAN MATEO COUNTY

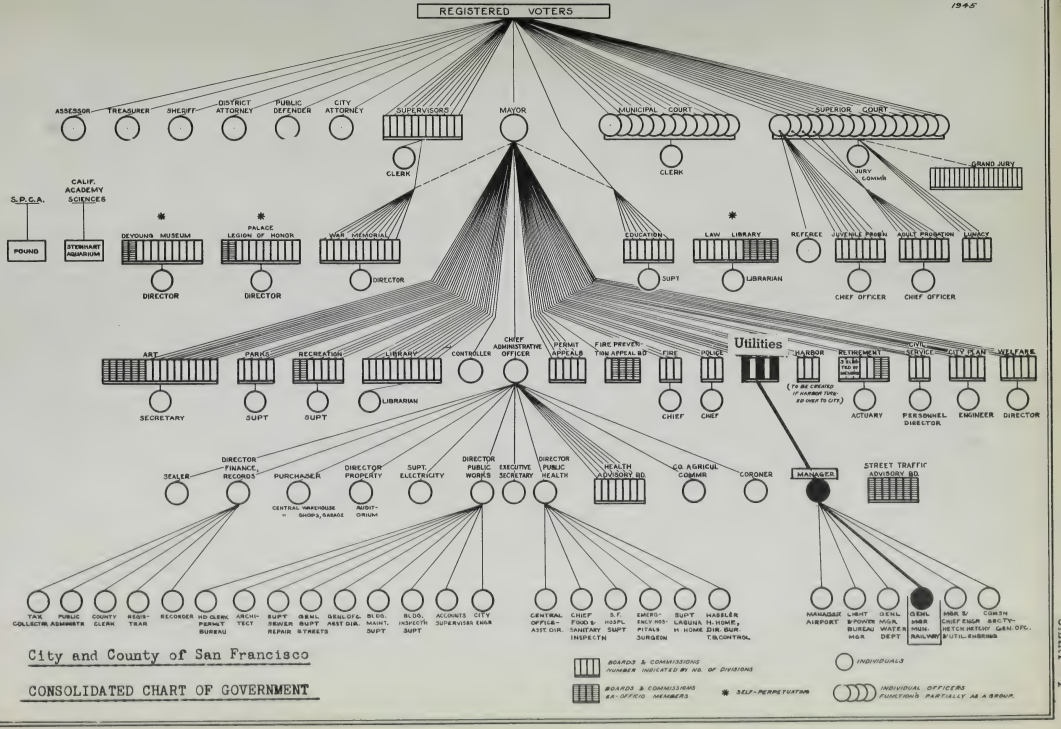
DALY CITY 13.2 MILES FROM DALY CITY TO SAN MATEO - LINE NO 40

SEE INSET



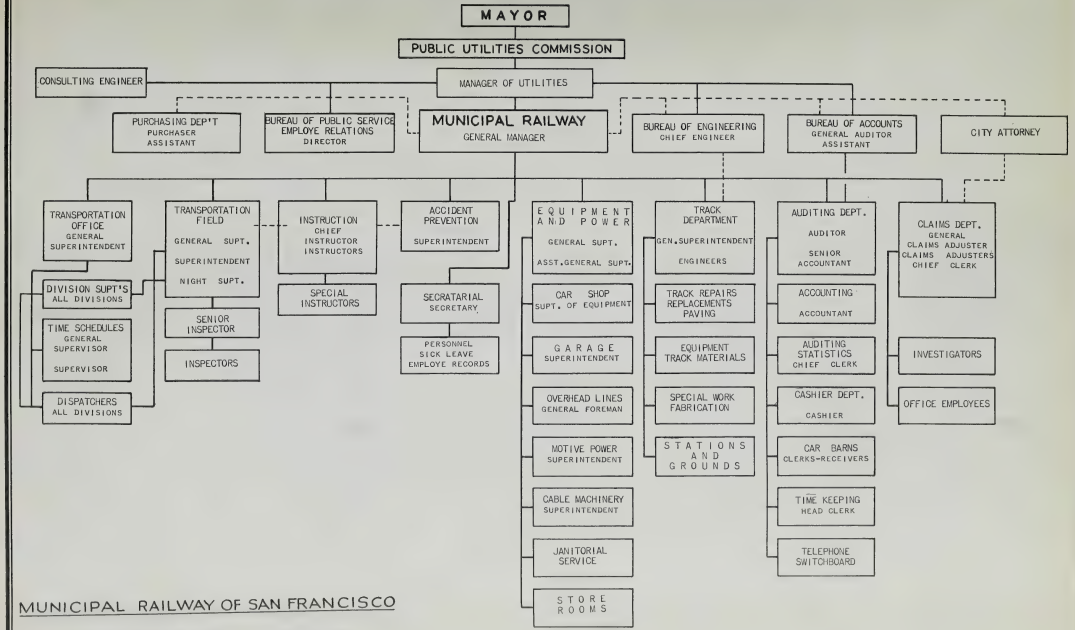
INSET SHOWING MARKET ST RY TO SAN MATEO

SAN FRANCISCO BUREAU
OF GOVERNMENTAL RESEARCH
58 Sutter Street San Francisco
Alfred F. Smith Director
1945



City and County of San Francisco

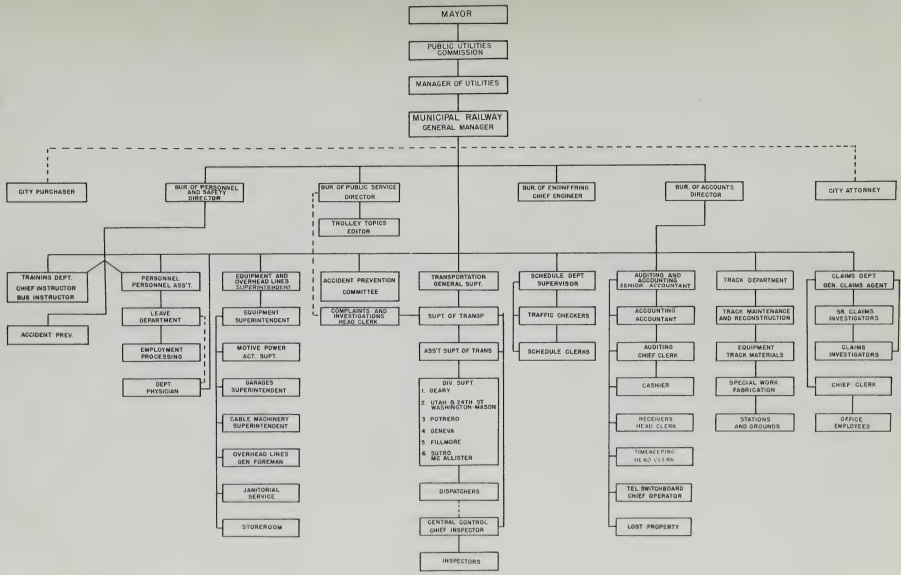
CONSOLIDATED CHART OF GOVERNMENT



MUNICIPAL RAILWAY OF SAN FRANCISCO

ORGANIZATION CHART

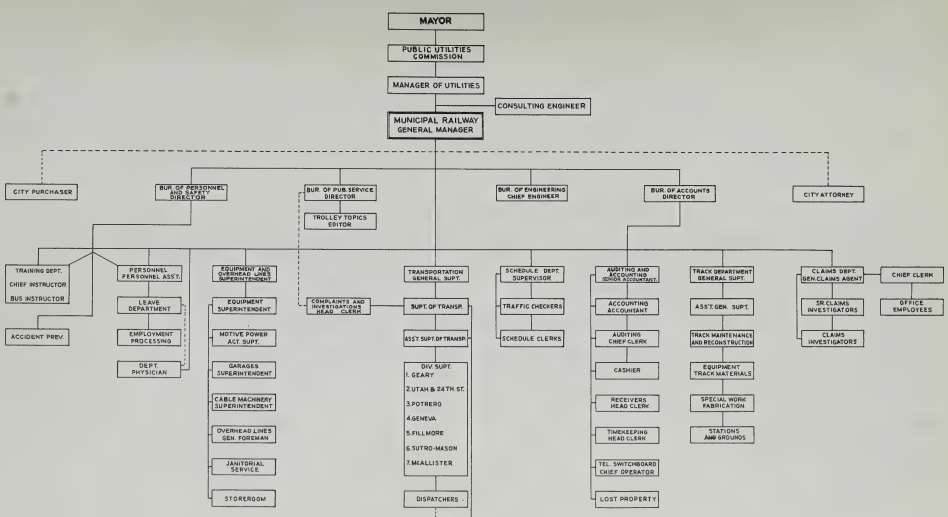
September 21, 1944



MUNICIPAL RAILWAY OF SAN FRANCISCO

ORGANIZATION CHART

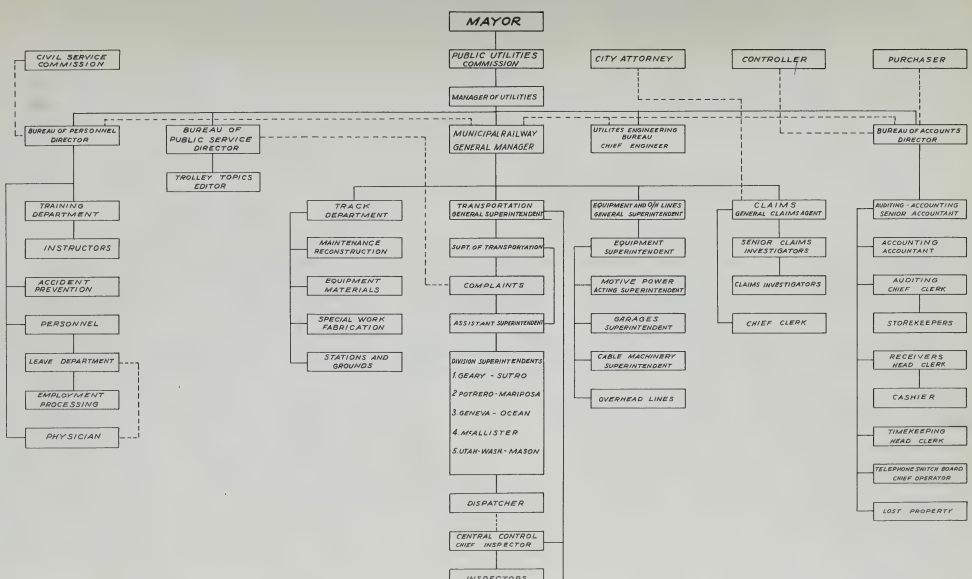
April 1, 1948



MUNICIPAL RAILWAY OF SAN FRANCISCO

ORGANIZATION CHART

August 1, 1947



MUNICIPAL RAILWAY OF SAN FRANCISCO

ORGANIZATION CHART

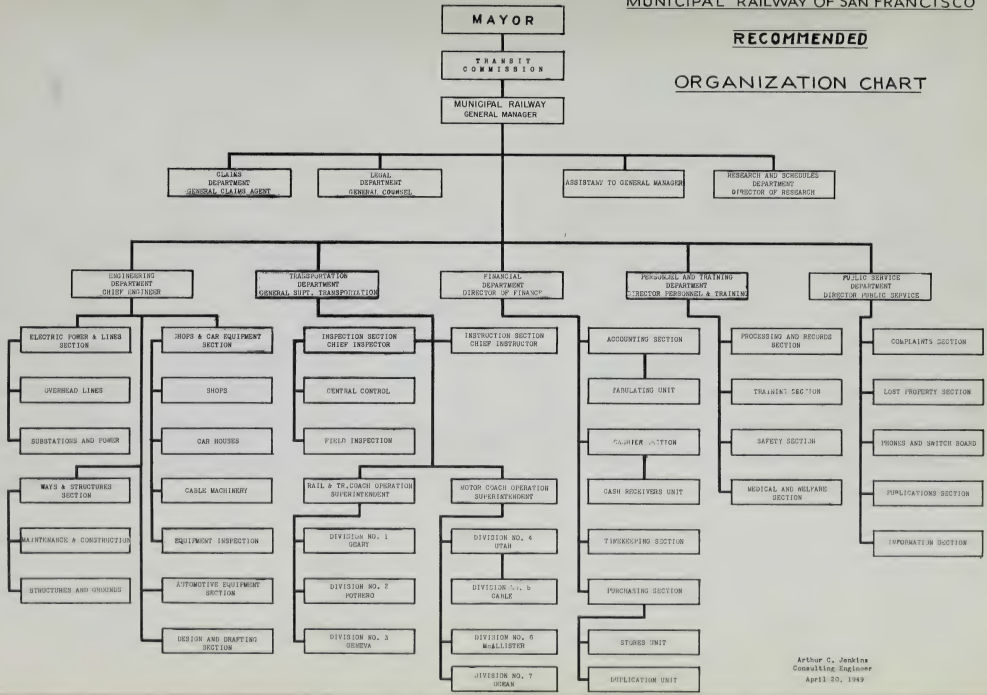
December 14, 1948

CHART V

MUNICIPAL RAILWAY OF SAN FRANCISCO

RECOMMENDED

ORGANIZATION CHART



Arthur C. Jenkins
Consulting Engineer
April 20, 1949

CHART VI

FARE PASSENGERS

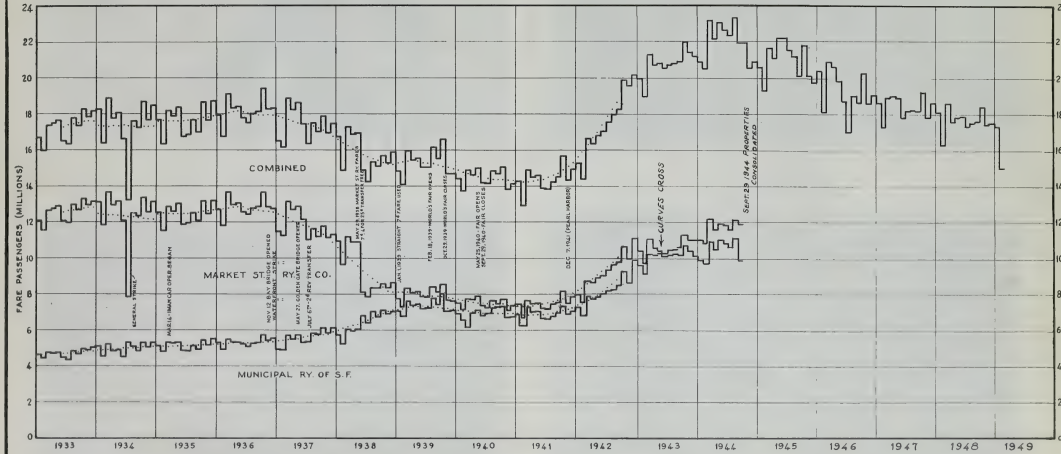

FARE PASSENGERS (MILLIONS)
COMBINED
MARKET ST. RY. CO.
MUNICIPAL RY. OF S.F.
← CURVES CROSS
Sept 29, 1944 PROPERTIES CONSOLIDATED
GENERAL STRIKE
MUNI LIMITED ONE-MAN
NOV 12 BAY BRIDGE OPENED
NOV 27 GOLDEN GATE BRIDGE OPENED
JULY 6TH 2-FARE TRANSFER
MAY 28 MUNI MARKET ST. R'WAY
DEC 7 PEARL HARBOR
0 2 4 6 8 10 12 14 16 18 20 22 24
1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949

CHART VII

Figure 1
Turk and Fillmore
Line Department Storeroom

Figure 2
Geary Division
Workmen's Lockers

Figure 3
Geary Division
Car Service Pit

Figure 4
Geary Division
Rear of Car Service Shop

Figure 5
Geneva Division
Storage Bins

Figure 6
Geary Division
Car Service and Repair Area

Figure 7
Geary Division
Parts Storage Bins

Figure 8
Geary Division
Corner of File Storage Area

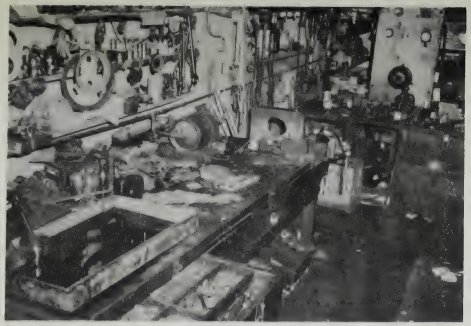


Figure 9
Geary Division
Car Service Work Shop

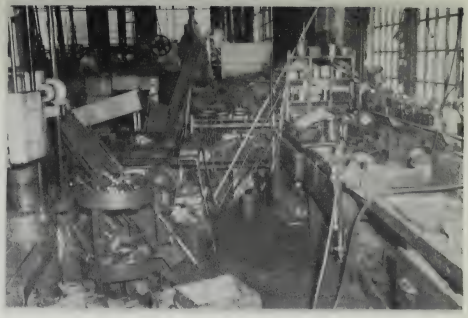


Figure 10
Elkton Shops
Typical Working Area

Figure 11
Geary Division
Oil Storage Room

Figure 12
Geary Division
Passageway between File Storage and Cars

Figure 13
Turk and Fillmore
Line Service Equipment

Figure 14
McAllister Division
Tire Repair Shop

Figure 15
Turk and Fillmore
Line Service Truck

Figure 16
McAllister Division
Open Air Bus Service and Washing Facility

Municipal Railway of San Francisco

BALANCE SHEET OCTOBER 31, 1948 - ASSETS

ROAD AND EQUIPMENT			
Municipal Railway	$16,997,575.52		
Reserve for Depreciation	9,036,658.94	$7,960,916.58	
Market Street Railway Extension	$28,275,706.16		
Reserve for Depreciation	22,422,552.88		
	$ 5,853,153.28		
Excess of Appraisal over Cost	1,612,923.30	4,240,229.98	
Construction in Progress		7,642.23	$12,208,788.79
CASH ON DEPOSIT WITH TREASURER			
Operating Fund		2,009,256.93	
Bond Redemption and Interest Funds		1,875.00	
Reconstruction and Replacement Fund		375,296.61	
Market Street Extension		848,540.68	
Other Funds		37,106.80	
Other Cash		85,958.01	3,358,034.03
ACCOUNTS RECEIVABLE			
Capital Improvement Fund		678,927.35	
Other		23,907.25	702,834.60
INTRAFUND ACCOUNTS			279,098.90
DEFERRED CHARGES			
Materials and Supplies		932,170.08	
Replacement Jobs in Progress		373,509.68	
Suspense Debits		178,496.08	
Prepaid Expenses:			
Purchasing Department	4,066.67		
Hetch Hetchy Water Supply	73,123.58		
Public Utilities Commission	32,184.47		
Controller	3,333.33		
Insurance	2,649.12		
City Attorney	65,900.67	181,257.84	1,665,433.68
			$18,214,190.00

TABLE I

Municipal Railway of San Francisco

BALANCE SHEET OCTOBER 31, 1948 - LIABILITIES

BONDED DEBT		
Issue of December 1, 1913, due 1948-52	$ 500,000.00	
1947 Market Street Ry. Refimancing	1,950,000.00	
Matured Bonds (1913 Issue)	1,300.00	$2,451,300.00
BOND INTEREST CAYABLE		
Accrued - Not Due	80,591.06	
Matured Coupons Unpaid	1,262.50	81,853.56
ACCOUNTS PAYABLE		
Warrants Outstanding	334,108.19	
General Creditors	754,060.66	
Payrolls Payable	738,161.67	1,826,330.52
INTERFUND ACCOUNTS		1,446,978.93
INTRAFUND ACCOUNTS		252,960.43
DEFERRED CREDITS		
Accident Reserve	2,320,295.26	
Reserve for Obsolescence in Inventory	123,503.88	
Suspense Credits	46,268.31	
Reserve for Token Liability	264,749.00	
Miscellaneous Deposits	372.87	
Reserve for Employees' Compensation Claims	165,000.00	
Premium on 1947 Market Street Railway Bonds	331.56	
Capital Improvement Fund	678,927.35	3,599,448.23
SURPLUS		8,555,318.33
		$18,214,190.00

TABLE II

Municipal Railway of San Francisco

SURPLUS ACCOUNT - OCTOBER 31, 1948

	Contributed	Earned	Total
ADDITIONS TO SURPLUS	(1)	(2)	(3)
General Taxes	$1,501,745.31		1,501,745.31
Donated Equipment	96,030.09		96,030.09
Stores	4,878.88		4,878.88
Impounded Fares - Market Street Railway	688,751.58		688,751.58
Equipment from 1947 Municipal Railway Rehabilitation Bond Fund	1,855,493.95		1,855,493.95
Net Earnings from Railway Operations Dec. 28, 1912 to June 30, 1948		$5,470,880.05	5,470,880.05
TOTAL ADDITIONS	4,146,899.81	5,470,880.05	9,617,779.86
DEDUCTIONS FROM SURPLUS			
For 1947 Municipal Railway Rehabilitation Bond Interest	38,271.19		38,271.19
	4,108,628.62	5,470,880.05	9,579,508.67
ADDITIONS TO SURPLUS JULY 1, 1948 TO OCTOBER 31, 1948			
Municipal Railway Rehabilitation Bond Interest	49,102.65		49,102.65
DEDUCTIONS FROM SURPLUS JULY 1, 1948 to OCTOBER 31, 1948			
For 1947 Municipal Railway Rehabilitation Bond Interest	37,828.23		37,828.23
Audit Adjustment for Fiscal Year 1947-1948		93,310.06	93,310.06
Back Pay Awarded to Former Market Street Railway Employees		13,378.10	13,378.10
Net Loss from Railway Operations		928,776.60	928,776.60
TOTAL DEDUCTIONS	37,828.23	1,035,464.76	1,073,292.99
S U R P L U S - OCTOBER 31, 1948	$4,119,903.04	$4,435,415.29	$8,555,318.33

TABEL III

Municipal Railway of San Francisco

INTERFUND ACCOUNTS PAYABLE OCTOBER 31, 1948

A - GENERAL CITY AND COUNTY

GENERAL FUND			
Purchasing Department			
Scavenger Services 1948-49	$ 3,700.00		
Fidelity Bonds 1948-49	2,400.00		
Services Employees 7/1/48 to 9/30/49	17,149.71		
Blueprints & Photostats 7/1/48 to 9/30/49	93.25	$23,342.96	
City Attorney			
Services 1948-49	98,851.00		
Reporters Fees	168.00		
Traveling Expenses	73.90	99,092.90	
Controller			
Services 1948-49		5,000.00	
Department of Electricity			
Maintain Radio Equipment		185.56	
Police Department			
Damage Claim		154.50	
Total - General Fund			$ 127,775.92
EMPLOYEES' RETIREMENT SYSTEM			
Hospital Charges 7/1/48 to 10/31/48		5,216.89	
Compensation & Medical 7/1/48 to 10/31/48		16,678.77	
Pension Matching & Prior Service Dec.1947 to 10/31/48		981,801.90	
Reserve for Overhead		76.13	
Total - Employees' Retirement System			1,003,773.69
COUNTY ROADS FUND			
Department of Public Works			
Paving Repairs 7/1/48 to 10/31/48		13,817.87	13,817.87
TOTAL - GENERAL CITY AND COUNTY			1,145,367.48

B - PUBLIC SERVICE ENTERPRISES

PUBLIC UTILITIES COMMISSION		
Bureau of Light, Heat & Power - Aug. Sept. & Oct.Power	213,603.82	
General Office - Official Advertising	27.00	
Hetch Hetchy Water Supply - Engineering 1948-49	69,112.00	
Utilities Engineering Bureau	18,868.63	
TOTAL - PUBLIC SERVICE ENTERPRISES		301,611.45
TOTAL INTERFUND ACCOUNTS PAYABLE		$1,446,978.93

Municipal Railway of San Francisco

COMPARATIVE INCOME STATEMENT FOR OCTOBER, 1948 AND 1947

Item	1948 Amount (1)	1948 Percent (2)	1947 Amount (3)	1947 Percent (4)
OPERATING REVENUE				
Passenger Revenue	$1,519,869.33	100.00	$1,598,394.82	100.00
Advertising Revenue	11,410.23		12,029.49	
Miscellaneous	1,377.12		992.47	
Total Operating Revenue	$1,532,656.68		$1,611,416.78	
OPERATING EXPENSES				
Way and Structures	$ 67,487.87	4.44	$ 80,101.61	5.01
Equipment	175,662.18	11.56	166,668.31	10.43
Power	172,252.05	11.33	147,898.74	9.25
Conducting Transportation	898,358.04	59.11	896,150.50	56.07
General and Miscellaneous	190,752.32	12.55	195,347.18	12.22
Total Operating Expenses	*$1,504,512.46	98.99	$1,486,166.34	92.98
PROFIT FROM OPERATIONS	$ 28,144.22		$ 125,250.44	
DEDUCT PROVISION FOR				
Accidents	113,990.20	7.50	159,839.48	10.00
Depreciation	114,095.49	7.51	90,653.45	5.67
Total Deductions	$ 228,085.69	15.01	$ 250,492.93	15.67
INCOME FROM OPERATIONS	(199,941.47)		(125,242.49)	
NON-OPERATING INCOME			5,287.15	
GROSS INCOME	(199,941.47)		(119,955.34)	
DEDUCTIONS FROM GROSS INCOME				
Interest on Funded Debt	7,181.78	.47	2,500.00	.16
Interest During Acquisition			6,409.01	.40
Taxes	1,416.67	.09	1,416.67	.09
Total Deductions from Gross Income	8,598.45	.56	10,325.68	.65
N E T I N C O M E	(208,539.92)	(13.72)	(130,281.02)	(8.15)

*Includes Platform Men Wage Increase and Pension Matching. ( ) Red figures.

TABLE V

Municipal Railway of San Francisco

PLANT INVESTMENT BY TYPES OF SERVICE

AS OF JUNE 30, 1948

	Total Cost	Accrued Depreciation	Excess Value over Purchase Cost Market Street Extension	Present Value
Electric Street Cars - Municipal Railway	$11,428,751.96	$7,956,160.95		$3,472,591.01
Electric Street Cars - Market St. Extension	25,075,111.86	19,791,492.46	$1,454,453.73	3,829,165.67
Electric Street Cars - Total	36,503,863.82	27,747,653.41	1,454,453.73	7,301,756.68
Cable Cars - Municipal Railway	5,631.14	72.52		5,558.62
Cable Cars - Market Street Extension	1,695,227.69	1,428,423.93	74,801.81	192,001.95
Cable Cars - Total	1,700,858.83	1,428,496.45	74,801.81	197,560.57
Motor Coaches - Municipal Railway	4,387,557.22	672,008.80		3,715,548.42
Motor Coaches - Market Street Extension	1,262,493.77	841,601.96	115,984.14	304,907.67
Motor Coaches - Total	5,650,050.99	1,513,610.76	115,984.14	4,020,456.09
Trolley Coaches - Municipal Railway	1,180,421.00	121,467.30		1,058,953.70
Trolley Coaches - Market Street Extension	242,872.84	126,772.23	32,513.37	83,587.24
Trolley Coaches - Total	1,423,293.84	248,239.53	32,513.37	1,142,540.94
Total Plant Investment - Municipal Railway	17,002,361.32	8,749,709.57		8,252,651.75
Total Plant Investment - Market St. Exten.	28,275,706.16	22,188,290.58	1,677,753.05	4,409,662.53
TOTAL PLANT INVESTMENT-CONSOLIDATED SYSTEM	$45,278,067.48	$30,938,000.15	$1,677,753.05	$12,662,314.28

TABLE VI

COMBINED INCOME STATEMENT
MARKET STREET RAILWAY AND MUNICIPAL RAILWAY OF SAN FRANCISCO
YEARS 1932 TO 1948 INCLUSIVE

Year	Passenger Revenue	Other Revenue	Operating Revenue	Operating Expenses Excluding Depreciation and Taxes	Depreciation	Taxes	Operating Income	Non-Operating Income (Net)	Gross Income	Deductions From Gross Income	Net Income
1932	$10,710,710	$ 92,305	$10,803,015	$ 9,486,462	$ 548,975	$399,000	$ 368,578	$ 37,059	$ 405,637	$ 732,243	($326,606)
1933	10,105,753	84,801	10,190,554	8,560,898	668,071	382,000	579,585	32,764	612,349	703,172	(90,823)
1934	10,153,959	70,156	10,224,115	8,433,122	437,770	416,000	937,223	37,671	974,894	806,452	168,442
1935	10,271,789	86,957	10,358,746	8,632,080	600,000	328,009	798,657	50,934	849,591	639,882	209,709
1936	10,551,883	95,807	10,647,690	8,813,837	600,000	306,500	927,353	116,718	1,044,071	595,939	448,132
1937	10,382,550	90,846	10,473,396	8,883,987	600,000	402,000	587,409	17,822	605,231	566,899	38,332
1938	10,162,121	88,226	10,250,347	8,834,988	685,000	432,000	298,359	19,537	317,896	588,492	(270,596)
1939	10,617,777	111,849	10,729,626	8,688,044	1,488,847	424,000	128,735	21,934	150,669	529,523	(378,854)
1940	10,054,950	97,453	10,152,403	8,572,773	882,199	416,000	281,431	11,189	292,620	423,298	(130,678)
1941	10,082,328	86,180	10,168,508	8,442,028	898,632	416,000	411,848	19,809	431,657	398,236	33,421)
1942	12,385,521	81,737	12,467,258	9,471,665	913,598	425,500	1,656,495	25,984	1,682,479	1,222,887	459,592
1943	14,684,924	98,263	14,783,187	11,234,895	1,313,121	411,000	1,824,171	21,049	1,845,220	615,532	1,229,688
1944	16,140,708	116,935	16,257,643	12,479,134	1,341,259	301,175	2,136,075	15,122	2,151,197	1,189,824	961,373
1945	17,413,391	148,927	17,562,318	13,671,526	910,663	-	2,980,130	27,494	3,007,624	183,926	2,823,698
1946	18,254,317	149,667	18,403,984	18,503,438	1,046,395	-	(1,145,849)	(84,843)	(1,230,692)	149,918	(1,380,610)
1947	18,590,087	143,752	18,733,839	18,921,614	1,079,792	-	(1,267,567)	58,170	(1,209,397)	126,654	(1,336,051)
1948	17,780,149	150,743	17,930,892	18,704,652	1,229,541	-	(2,003,301)	(189,077)	(2,192,378)	103,888	(2,296,266)

( ) - Red Figures.

TABLE VII

Municipal Railway of San Francisco

FINANCIAL RESULTS OF OPERATIONS BY TYPES OF SERVICE

FISCAL YEAR ENDED JUNE 30, 1948

	Electric Street Car	Motor Coach	Trolley Coach	Cable Cars	System Total
Total Revenue	$12,659,719.92	$4,444,594.57	$662,250.93	$555,016.49	$18,321,581.91
Operating Expenses	11,219,353.52	4,772,104.38	490,052.98	594,960.31	17,076,471.19
Depreciation	744,780.25	283,451.77	40,185.27	19,424.16	1,087,841.45
Accident Reserve	788,330.40	432,664.82	63,960.13	76,900.95	1,361,856.30
Interest	81,225.93	8,143.88	1,873.45	4,210.23	95,453.49
Non-Operating Expense	133,525.97	46,658.70	94.30	9,964.99	190,243.96
Taxes	17,552.68	--	--	--	17,552.68
Total Deductions	12,984,768.75	5,543,023.55	596,166.13	705,460.64	19,829,419.07
Net Income	(325,048.83)	(1,098,428.98)	66,084.80	(150,444.15)	(1,507,837.16)
Bond Redemption	100,000.00	--	--	--	100,000.00
Surplus or Deficit	($425,048.83)	($1,098,428.98)	$66,084.80	($150,444.15)	($1,607,837.16)

TABLE VIII

Municipal Railway of San Francisco

COMPARATIVE OPERATING DATA

Fiscal Year Ended June 30, 1948

	Total	Ratio to Revenue	Per Vehicle Mile	Per Vehicle Hour
Passenger Revenue	$18,171,522	100.00	$.625	$5.780
Operating Expense	17,076,471	93.97	.587	5.432
Interest	96,328	.53	.003	.031
Provision for Depreciation	1,087,841	5.99	.037	.346
Provision for Accidents	1,361,856	7.49	.047	.433
Taxes	17,553	.10	.001	.005
Net Income	($1,507,837)	(8.30)	($.052)	($.479)
Total Vehicle Miles	29,066,859			
Total Vehicle Hours	3,143,524			
Platform Expense - All Operations	8,080,484	44.47	.278	2.571
Revenue Passengers Carried	216,788,454		7.458	68.963
Free Transfer Passengers Carried	91,186,592		3.137	29.008
Total Passengers Carried	307,975,046		10.595	97.971

Number of Employees		3,628	
Rate of Fare with Free Transfer		8-1/3¢ Token - 10¢ Cash	
Single Track Miles:			
Operative -- Electric	222.5		
-- Cable	6.8	229.3	
Non-Operative -- Electric	62.7		
-- Cable	2.3	65.0	
Total Single Track Miles		294.3	
Round Trip Miles - Motor Coach Routes			339.8
Round Trip Miles - Trolley Coach Routes			24.5
Vehicles Owned			
Street Cars			553
Cable Cars			27
Motor Coaches			367
Trolley Coaches			58
Total Passenger Vehicles			1,005
Electric Work Cars			23
Motor Trucks			52
Passenger Automobiles			24
Motorcycles			11
Trailers			29
Tractors			2
Gasoline Rail Inspection Cars			2
Total Service Units			143

FINANCIAL RESULTS OF OPERATION

TOTAL TRANSIT OPERATIONS OF UNITED STATES

1932 TO 1947

(Figures are in Thousands)

Year	Operating Revenue (1)	Operating Exp. (Incl.Deprec.) (2)	Net Revenue (3)	Taxes (4)
1932	$ 696,490	$ 562,850	$ 133,640	$ 51,021
1933	642,400	502,420	139,980	47,370
1934	674,900	525,490	149,410	49,183
1935	681,400	534,930	146,470	50,458
1936	727,900	565,180	162,720	56,920
1937	733,500	588,680	144,820	63,504
1938	700,800	579,690	121,110	65,723
1939	720,700	586,600	134,100	67,499
1940	737,000	598,030	138,970	62,688
1941	800,300	644,260	156,040	66,803
1942	1,040,000	769,390	270,610	128,650
1943	1,294,000	932,970	361,030	186,340
1944	1,362,300	1,012,070	350,230	189,250
1945	1,380,400	1,067,140	313,260	164,530
1946	1,397,100	1,129,430	267,670	129,020
1947	1,390,800	1,238,740	152,060	104,940

TABLE 2. (Continued)

Year	Operating Income (5)	Operating Ratio (6)	Taxes In % of Revenue (7)	Operating Income in % of Revenue (8)
1932	82,619	80.81%	7.33%	11.86%
1933	92,610	78.21	7.37	14.42
1934	100,227	77.86	7.29	14.85
1935	96,012	78.50	7.41	14.09
1936	105,800	77.65	7.82	14.53
1937	81,316	80.26	8.66	11.09
1938	55,387	82.72	9.38	7.90
1939	66,601	81.39	9.37	9.24
1940	76,282	81.14	8.51	10.35
1941	89,237	80.50	8.35	11.15
1942	141,960	73.98	12.37	13.65
1943	174,690	72.10	14.40	13.50
1944	160,980	74.29	13.89	11.82
1945	148,730	77.31	11.92	10.77
1946	138,650	80.85	9.23	9.92
1947	47,120	89.07	7.54	3.39

ATA Data.

Municipal Railway of San Francisco

SEGREGATION OF LABOR AND MATERIAL COSTS

OCTOBER, 1948

ACCOUNTING GROUP	LABOR		MATERIAL		TOTAL	
	Amount	Percent	Amount	Percent	Amount	Percent
Operating Expenses:	(1)	(2)	(3)	(4)	(5)	(6)
Way and Structures	55,663.08	82.48	11,824.79	17.52	67,487.87	3.89
Equipment	94,368.87	53.72	81,293.31	46.28	175,662.18	10.13
Power	15,145.39	8.79	157,106.66	91.21	172,252.05	9.93
Conducting Transportation	830,722.45	92.47	67,635.59	7.53	898,358.04	51.81
General and Administrative	67,237.96	35.25	123,514.36	64.75	190,752.32	11.00
Total Maintenance & Operation	1,063,137.75	70.66	441,374.71	29.34	1,504,512.46	86.76
Depreciation Expense	--		114,095.49	100.0	114,095.49	6.59
Accident Expense	--		113,990.20	100.0	113,990.20	6.57
Taxes	--		1,416.67	100.0	1,416.67	0.08
TOTAL COST	$1,063,137.75	61.31	$670,877.07	38.69	$1,734,014.82	100.0

TABLE XI

Municipal Railway of San Francisco

OVERTIME, PER DIEM AND HOURLY EMPLOYEES

PERIOD 1948-49		TOTAL HOURS	TOTAL OVERTIME HOURS	TOTAL OVERTIME % OF TOTAL
SHOP, LINE, POWER				
1 -15	October	29,775	2,225	7.5
16-31	October	28,182	3,078	10.9
1 -15	November	29,581	2,006	6.8
16-30	November	26,985	2,364	8.8
1 -15	December	28,808	2,002	7.0
16-31	December	31,083	1,825	5.9
1 -15	January	27,022	2,442	9.0
16-31	January	29,275	2,405	8.2
1 -15	February	28,426	1,823	6.4
16-28	February	22,997	2,059	8.9
1 -15	March	27,463	1,888	6.9
AUTOMOTIVE				
1 -15	October	16,111	2,126	13.2
16-31	October	15,912	2,745	17.3
1 -15	November	16,010	1,686	10.5
16-30	November	16,516	2,264	13.7
1 -15	December	16,947	1,588	9.4
16-31	December	18,193	1,817	10.0
1 -15	January	16,011	2,098	13.1
16-31	January	18,084	2,192	12.1
1 -15	February	17,809	1,657	9.3
16-28	February	14,669	1,991	13.5
1 -15	March	17,774	1,694	9.5
TRACK				
1 -15	October	13,614	1,025	7.5
16-31	October	13,143	1,618	12.3
1 -15	November	13,133	563	4.3
16-30	November	12,272	766	6.2
1 -15	December	13,393	735	5.5
16-31	December	14,235	616	4.3
1 -15	January	11,658	686	5.9
16-31	January	13,030	688	5.3
1 -15	February	12,233	668	5.5
16-28	February	9,809	877	8.9
1 -15	March	11,361	717	6.3

(a) O V E R T I M E

Period	Total Hours	Included in Schedule Hours	Included in Schedule % Of Total	Due delays,7th day,etc. Hours	Due delays,7th day,etc. % of Total
OPERATORS					
December, 1948	445,514	23,573	5.30	22,614	5.10
January, 1949	454,111	22,017	4.82	21,212	4.65
February, 1949	405,469	20,435	5.04	13,296	3.48

(a) Does not include bonus time for Christmas. This was 7,751 Hours or 1.7%.

Municipal Railway of San Francisco

PRESENT REHABILITATION PROGRAM UNDER 1947 BOND ISSUE

Item	Work Description	Estimated Total Cost	Appropriated 11/30/48 Total Amount	Appropriated 11/30/48 Surplus Transfer	Unappropriated Funds Required	Additional Bonds To Be Sold Jan. 1949	Additional Bonds To Be Sold Subsequent
1	259 Motor Coaches & Spare Parts	$ 4,193,275	$ 4,173,275	$	$ 20,000	$ 20,000	$
2	190 New Trolley Coaches	3,700,000	3,700,000				
3	100 New Trolley Coaches	1,980,000			1,980,000	1,980,000	
4	New Shop Equipment	180,000	180,000				
5	Overhaul & Install Automatic Doors, 55 Present Street Cars	166,725	166,725				
6	Remodel Potrero T.C. Lower Deck	617,000	141,000	360,000	249,000	249,000	
7	Remodel Potrero T.C. Upper Deck	133,000					
8	Land-Presidio Ave. Coach Yard	98,532					
9	Remodel Geary Car House T.C.	600,000	442,000	(360,000)	518,000	518,000	
10	Add 4,500 sq. ft. to Geary Car House for Offices	160,000			160,000		160,000
11	Remodel Geary Substation for offices	140,000			140,000	140,000	
12	Ocean Div. Ser. & Storage 150 M.C.						
13	Ocean Div. Ser. & Storage 70 M.C.	1,000,000	801,448		198,553		198,553
14	Construct Gen. Shop-Elkton Yard	1,500,000	75,000	10,000	1,415,000	1,415,000	
15	Construct Track & Line Department Equipment & Material - Elkton	150,000			150,000		150,000
16	Storage Yard M.C. - Utah Station	175,000			175,000	175,000	
17	Lake Merced Street Car Terminal	1,000,000			1,000,000		1,000,000
18	Misc. Small Structures as required	50,000			50,000	50,000	
19	Fence Kirkland Yard	2,500	2,500				
20	Remodel McAllister Yard Temp. Coach Div.	39,297	39,840	(543)			
	Tr. Coach Overhead Const. (Excl. Poles):						
21	McAllister Hayes 9.00 Miles	295,722	295,722				
22	Haight-Parnassus 4.61 Miles	245,000					
23	Haight-Sunset 4.67 Miles	248,000	250,251	(42,000)	284,749	284,749	
24	Fillmore 5.75 Miles	225,000	274,173	(49,172)			
25	Potrero Car House	126,000	26,858		99,142	99,142	
26	Market 3.50 Miles	173,055	131,055	42,000			

(Continued on following page.)

TABLE XIII

Item	Work Description	Estimated Total Cost	Appropriated 11/30/48 Total Amount	Surplus Transfer	Unappropriated Funds Required	Additional Bonds To Be Sold Jan. 1949	Subsequent
Tr.	Coach Overhead Const. (Excl. Poles): Cont.						
27	Mission 4.90 Miles	$267,000	$12,000	$	$255,000	$255,000	$
28	Sutter Lines 5.75 Miles	342,000			342,000		342,000
29	Stockton-Fourth 4.08 Miles	217,000			217,000		217,000
30	Van Ness-Potrero 7.88 Miles	440,000			440,000		440,000
31	Tr. Coach Line Mater.-Mostly Poles	285,776	145,776	49,172	90,828	90,828	
	Track Reconstruction:						
32	Market Street, Eddy to Valencia	265,000	265,000				
33	Ocean Ave., 19th to Brighton Way	475,000			475,000		475,000
34	Twin Peaks Tunnel	80,000			80,000	80,000	
35	Powell Street Turntable	20,000	20,000				
36	Mason Street Cable	30,000			30,000	30,000	
37	Various Locations	216,949	26,949		190,000	72,553	117,447
38	Track Reconstruction Material	73,051	73,051				
39	Contingencies	90,117	48,845	543	40,728	40,728	
	TOTAL	$20,000,000	$11,400,000	-	$8,600,000	$5,500,000	$3,100,000

( ) Red Figures.

XIII (Cont'd.)

STATISTICAL DATA
MASS TRANSPORTATION FACILITIES - CITY OF SAN FRANCISCO
1941

TABLE XIV

Carrier	Round Trip Route Miles	(1) Rolling Stock	Vehicle Miles Operated	(2) Total Passengers	Total Passengers Per Mile	Revenue Passengers	Revenue Passengers Per Mile	Base Fare Structure
MARKET STREET RAILWAY								
Street Car	280.06	442	10,920,524	86,739,761	7.9428	64,576,639	5.9133	7 Cents
Cable Car	12.23	39	672,679	8,181,361	12.1624	5,423,008	8.0618	7 "
Bus	158.46	115	4,842,454	29,057,523	6.0006	18,378,119	3.7952	7 "
Trolley Coach	10.17	9	418,889	2,262,642	5.4015	1,476,851	3.5256	7 "
Total	460.92	605	16,854,546	126,241,287	7.4900	89,854,617	5.3312	
MUNICIPAL RAILWAY								
Street Car	113.25	238	8,111,999	96,077,936	11.8439	75,040,956	9.2506	5 Cents
Cable Car	-	-	-	-	-	-	-	-
Bus	60.03	41	2,027,909	11,521,972	5.6817	7,225,503	3.5630	5 Cents
Trolley Coach	6.81	9	100,782	850,748	8.4415	671,039	6.6583	5 "
Total	180.09	288	10,240,690	108,450,656	10.5902	82,937,498	8.0988	
MARKET ST. & MUNICIPAL COMBINED								
Street Car	393.31	680	19,032,523	182,817,697	9.6055	139,617,595	7.3357	
Cable Car	12.23	39	672,679	8,181,361	12.1624	5,423,008	8.0618	
Bus	218.49	156	6,870,363	40,579,495	5.9065	25,603,622	3.7267	
Trolley Coach	16.98	18	519,671	3,113,390	5.9911	2,147,890	4.1332	
Total	641.01	893	27,095,236	234,691,943	8.6617	172,792,115	6.3772	
CALIFORNIA CABLE	10.58	48	928,398	11,019,536	12.1984	9,033,596	9.7303	5 Cents(4)
JITNEY (3)	36.00	136	8,250,000	6,000,000	0.7273	6,000,000	0.7273	10 "

NOTE: Miles outside San Francisco (#40 San Mateo Line) = 26.65 round trip miles in San Mateo County.

(1) This includes all rolling stock, except work cars. As of 12-31-41, 395 out of a total of 481 Street Cars were assigned.

(2) Transfer passengers included; Pass passengers not included.

(3) All figures are estimates. Only 25.0 round trip miles of Jitney route now operated.

(4) Application for 7-cent fare pending before California Railroad Commission.

Municipal Railway of San Francisco

PASSENGER TRAFFIC ANALYSIS

OCTOBER 1948

Line	Cash Fares (1)	Registered Tokens (2)	Postal Employees (3)	School Tickets (4)	Calif. St. Cable Transfers (5)	Local Transfers (6)	Total Passengers (7)
STREET CAR LINES							
B	150,956	746,135	2,930	49,793	3,814	270,758	1,224,386
C	65,793	369,408	1,029	25,819	2,347	136,895	601,291
D	40,531	219,595	735	18,172	2,311	70,391	351,735
F	122,607	708,980	1,948	50,672	4,004	337,078	1,225,289
H	90,960	555,685	2,383	39,177	10,716	450,432	1,149,353
J	87,459	476,737	2,588	34,422	1,542	207,223	809,971
K	111,538	538,609	3,067	40,296	1,964	248,739	944,213
L	117,193	631,932	3,665	43,755	973	240,688	1,038,206
M	25,216	133,640	1,192	10,815	290	54,360	225,513
N	121,669	703,853	4,762	47,652	1,500	257,870	1,137,306
1	35,068	234,080	1,580	17,678	4,076	98,335	390,817
2	37,952	251,269	1,213	18,611	5,843	105,179	420,067
3	51,302	270,565	1,168	21,610	6,197	147,434	498,306
8	9,347	59,874	-	5,545	244	33,431	108,441
9	34,750	168,478	2,588	12,846	-	63,094	281,756
11	43,438	224,254	3,114	17,615	-	99,173	387,594
12	3,828	17,901	-	-	-	7,799	29,528
14	221,552	989,825	7,355	74,350	-	414,702	1,707,784
31	50,760	349,045	1,213	26,406	823	122,958	551,205
40	108,959	19,088	342	48,000	-	23,829	202,282
TOTAL	1,530,878	7,668,953	42,872	603,264	46,644	3,390,368	13,282,979
PERCENT	11.5	57.7	0.3	4.6	0.4	25.5	100.0

(Continued on following page.)

TABLE XV

Line	Cash Fares (1)	Registered Tokens (2)	Postal Employees (3)	School Tickets (4)	Calif. St. Cable Transfers (5)	Local Transfers (6)	Total Passengers (7)
MOTOR COACH LINES							
1	30,250	205,437	643	16,565	-	164,487	417,382
1 & 2	37,693	227,533	-	11,773	5,365	139,681	422,045
2	28,177	207,543	137	14,351	64	105,772	356,044
3	22,019	132,854	412	11,281	-	134,271	300,837
4	13,760	70,462	137	1,715	615	51,305	137,994
4-M	6,302	60,605	505	4,383	637	40,226	112,658
5	2,463	17,041	46	1,203	4	15,843	36,600
5-M	72,093	505,005	984	35,233	2,014	251,095	866,424
6	20,371	113,494	870	8,636	-	77,314	220,685
6-M	27,999	192,433	505	15,253	-	96,920	333,110
7	3,731	25,406	137	1,891	-	39,296	70,461
7-M	73,501	480,818	1,992	34,889	-	229,421	820,621
8	736	5,873	23	473	-	5,691	12,796
9	1,334	8,311	23	602	19	7,427	17,716
11	1,927	9,323	-	602	36	13,980	25,868
14	5,014	37,444	137	2,621	-	37,641	82,857
15	138,182	737,761	1,763	57,018	7,732	529,991	1,472,447
17	2,159	10,933	343	859	-	6,364	20,658
18	2,512	16,460	114	1,418	-	20,503	41,007
18-M	1,010	5,299	-	258	-	8,382	14,949
19	41,357	266,800	526	19,163	5,293	188,022	521,161
20	26,808	171,052	435	11,902	303	86,140	296,640
21	58,009	401,652	871	30,722	715	192,716	684,685
22	80,063	532,378	1,855	38,971	9,288	431,048	1,093,603
23	3,369	22,722	92	1,676	-	23,925	51,784
24	33,768	258,905	1,260	17,574	2,824	193,860	508,191
25	21,094	126,141	183	9,754	-	70,883	228,055
26	39,848	205,548	343	16,800	-	130,936	393,475
27	17,871	112,019	229	7,777	-	65,588	203,484
29	8,852	40,057	252	3,051	-	32,949	85,161
30	4,119	17,904	-	988	-	21,873	44,884
31	12,242	85,162	69	4,469	350	52,055	154,347
42	35,701	167,708	275	14,652	-	119,892	338,228

(Continued on following page.)

Line	Cash Fares (1)	Registered Tokens (2)	Postal Employees (3)	School Tickets (4)	Calif. St. Cable Transfers (5)	Local Transfers (6)	Total Passengers (7)
MOTOR COACH LINES - Continued)							
44	1,558	8,436	-	859	-	1,803	12,656
50	11,087	46,877	183	3,523	-	38,208	99,878
51	12,039	58,158	481	4,683	-	68,106	143,467
52	6,394	23,305	160	1,891	-	25,693	57,443
53	3,855	28,732	320	1,977	-	34,035	68,919
54	8,493	51,399	-	4,340	-	43,056	107,288
55	10,154	82,396	23	6,359	-	42,319	141,251
57	1,500	11,292	-	1,246	-	3,703	17,741
75	192	1,479	-	-	-	1,789	3,460
TOTAL	929,606	5,790,157	16,328	423,401	35,259	3,844,209	11,038,960
PERCENT	8.4	52.5	0.2	3.8	0.3	34.8	100.0
CABLE CAR LINES							
59	63,870	173,427	344	15,173	9,943	122,481	385,238
60	59,412	257,605	550	19,836	12,598	154,839	504,840
TOTAL	123,282	431,032	894	35,009	22,541	277,320	890,078
PERCENT	13.9	48.4	0.1	3.9	2.5	31.2	100.0
TROLLEY COACH LINES							
E	70,941	460,107	1,879	35,954	5,910	192,305	767,096
33	28,677	168,348	527	12,724	-	99,092	309,368
TOTAL	99,618	628,455	2,406	48,678	5,910	291,397	1,076,464
PERCENT	9.3	58.4	0.2	4.5	0.5	27.1	100.0
GRAND TOTAL	2,683,384	14,518,597	62,500	1,170,354	110,354	7,803,294	26,288,481
PERCENT	10.2	55.2	0.2	4.5	0.4	29.7	100.0

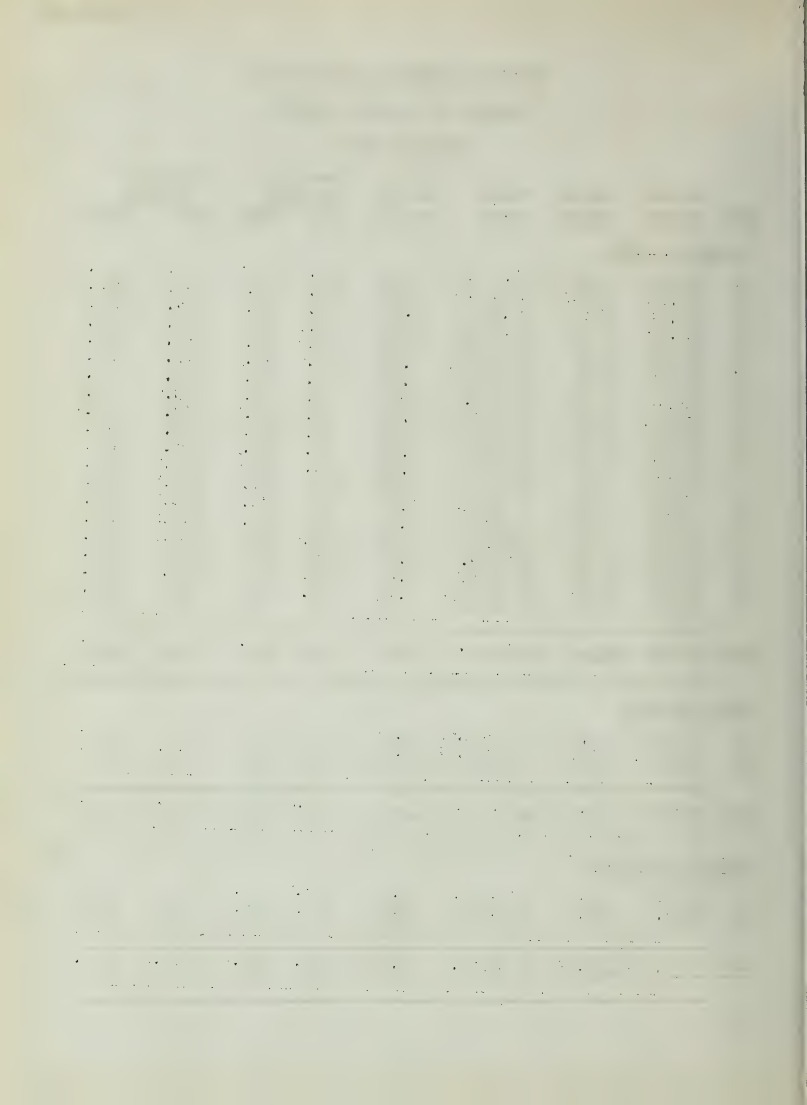
XY (Cont'd.)

Municipal Railway of San Francisco

ANALYSIS OF PASSENGER TRAFFIC

November, 1948

Line	Vehicle Mileage	Vehicle Hours	Total Revenue	Average Revenue Per Mile	Passengers Per Mile Fare	Passengers Per Mile Total	Passengers Per Hour Fare	Passengers Per Hour Total
STREET CAR LINES								
B	83,532	8,925	$ 75,407.48	$ .9027	10.8	13.8	100.8	129.0
C	38,977	4,547	36,344.18	.9325	12.1	14.3	96.1	122.2
D	21,407	2,952	22,057.34	1.0304	12.4	15.7	89.8	114.2
F	59,896	8,238	72,668.50	1.2132	14.6	20.6	106.1	150.1
H	80,270	9,936	52,648.16	.6559	7.9	13.3	63.7	107.5
J	52,456	6,607	46,348.51	.8836	10.6	14.3	84.0	113.9
K	89,791	8,889	53,716.49	.5982	7.2	9.8	72.2	99.0
L	96,970	9,998	61,414.03	.6333	7.6	10.0	73.6	96.8
M	26,447	2,573	13,610.03	.5146	6.2	8.2	63.5	83.9
N	97,222	10,300	69,445.46	.7143	8.6	11.1	80.9	104.7
1	24,321	2,792	22,343.12	.9187	11.1	15.3	96.7	132.9
2	27,093	3,071	24,170.75	.8921	10.8	14.6	95.0	129.1
3	15,188	2,600	22,116.74	1.4562	17.5	24.3	102.1	141.7
8	9,509	1,388	6,525.26	.6862	8.3	11.8	56.7	81.1
9	20,036	2,504	18,683.08	.9325	11.1	14.4	89.2	115.1
11	23,372	3,045	22,403.67	.9586	11.5	15.4	88.4	118.5
14	111,992	11,881	96,259.14	.8657	10.2	13.7	96.5	129.3
31	45,499	5,065	33,434.74	.7348	8.9	11.7	79.7	105.3
40	54,404	3,654	17,050.39	.3134	3.8	4.4	56.6	66.2
TOTAL	978,382	108,965	766,647.07	.7836	9.4	12.7	84.4	114.3
CABLE CAR LINES								
59	14,758	2,891	19,504.60	1.3216	15.6	24.5	79.7	125.2
60	21,091	3,812	25,836.79	1.2250	14.6	22.1	80.9	122.3
TOTAL	35,849	6,703	45,341.39	1.2648	15.0	23.1	80.4	123.6
TROLLEY COACH LINES								
E	75,257	8,272	44,996.05	.5979	7.2	9.7	65.5	88.6
33	43,111	4,206	16,551.77	.3839	4.6	6.9	47.1	70.3
TOTAL	118,368	12,478	61,547.82	.5200	6.3	8.7	58.1	82.4



Line	Vehicle Mileage	Vehicle Hours	Total Revenue	Average Revenue Per Mile	Passengers Per Mile Fare	Passengers Per Mile Total	Passengers Per Hour Fare	Passengers Per Hour Total
MOTOR COACH LINES								
1	60,515	5,728	$ 19,594.90	$ .3238	3.9	6.4	41.3	67.3
1&2	39,122	3,919	21,601.93	.5522	6.6	10.0	65.4	100.0
2	58,526	5,434	20,092.65	.3433	4.1	5.8	44.4	62.6
3	67,399	5,272	12,813.79	.1901	2.3	4.1	29.2	52.3
3M	16,799	1,683	4,447.70	.2648	3.2	5.7	31.8	56.8
4	18,886	2,170	7,048.91	.3732	4.3	7.0	37.7	61.0
4M	17,148	1,490	5,053.83	.2947	3.6	6.2	41.0	71.4
5	4,849	693	1,627.24	.3356	4.0	7.9	28.1	55.2
5M	92,698	9,397	49,842.73	.5377	6.5	9.1	63.9	90.0
6	22,930	2,558	11,542.90	.5034	6.0	9.4	54.1	84.1
6M	33,440	3,904	18,761.04	.5610	6.8	9.6	58.0	82.4
7	17,014	1,622	2,479.89	.1458	1.7	3.9	18.2	40.8
7M	88,513	9,397	47,095.72	.5321	6.4	8.8	60.2	83.1
8	4,060	439	587.98	.1448	1.7	3.2	15.9	29.9
9	9,017	757	841.15	.0933	1.1	2.2	13.1	26.7
11	3,832	678	960.91	.2508	2.9	6.2	16.6	35.0
11M	3,302	418	1,119.00	.3388	4.0	6.3	31.9	50.0
14	13,739	1,361	3,433.34	.2499	3.0	5.6	30.3	56.7
14M	5,272	507	1,386.95	.2631	3.1	4.2	32.2	43.5
15	153,547	15,780	73,650.32	.4797	5.7	8.9	55.9	86.9
17	4,586	402	1,154.27	.2517	3.0	4.6	34.4	52.8
18	12,909	1,131	2,029.74	.1572	1.9	3.5	21.3	39.5
18M	4,560	448	469.95	.1030	1.2	3.1	12.2	32.0
19	48,087	5,905	26,178.33	.5444	6.6	10.3	53.4	83.9
20	28,272	3,211	16,710.62	.5911	7.1	9.8	62.4	86.2
21	55,976	6,833	38,461.62	.6871	8.3	11.4	67.8	93.7
22	91,043	11,652	51,572.23	.5665	6.8	11.5	53.2	90.0
23	9,511	931	2,178.20	.2290	2.7	4.5	28.0	46.1
24	43,523	5,423	23,668.03	.5438	6.5	10.5	52.5	84.4
25	33,272	3,389	12,599.13	.3787	4.5	6.8	44.4	66.7
26	61,948	4,986	20,765.95	.3352	4.0	6.0	49.8	74.8
27	33,916	3,272	11,235.50	.3313	4.0	6.1	41.3	63.1
29	10,621	1,053	4,032.71	.3797	4.5	7.1	45.6	71.5
30	8,159	804	1,771.61	.2171	2.5	4.6	25.8	46.8
31	18,707	1,834	7,663.26	.4096	4.9	7.4	49.7	75.5
42	39,434	3,956	17,773.65	.4507	5.4	8.5	53.5	84.8
44	1,806	295	875.27	.4846	6.0	6.8	35.8	41.8
50	17,169	1,547	4,785.23	.2787	3.3	5.3	36.5	59.3
51	23,836	2,114	5,795.00	.2431	2.9	5.5	32.7	62.5
52	7,193	761	2,585.26	.3594	4.2	7.5	40.1	70.9
53	9,536	1,123	2,746.37	.2880	3.4	6.9	29.3	58.8
54	24,264	2,454	5,127.34	.2082	2.5	4.5	25.0	44.3
55	14,899	1,967	7,608.00	.5106	6.2	8.8	46.7	66.7
57	7,633	934	1,158.13	.1517	1.8	2.4	14.8	19.8
75	490	71	117.66	.2401	2.8	6.0	19.2	41.4
C	7,523	825	1,188.77	.1580	1.9	3.8	17.0	35.0
Charter	207	45	5,698.80	-	-	-	-	-
Total	1,349,688	140,573	$ 579,933.51	$.4297	5.1	7.9	49.3	75.9
SYSTEM	2,482,287	268,719	$ 1,453,469.79	$.5855	7.0	10.1	64.8	92.9

Municipal Railway of San Francisco

DAILY RECORD OF PASSENGER TRAFFIC-SYSTEM - JANUARY 1949

Date (1)	(2)	Cash Fares (3)	Registered Tokens (4)	Postal Employees (5)	Charter Passgrs. (6)	Excurs. Tickets (7)	School Tickets (8)	Cal.Cable Transfers (9)	Local Transfers (10)	Total Passengers (11)
S	1*	52,471	206,682	-	226	28	-	1,314	119,600	380,321
S	2	50,956	245,339	-	-	108	-	1,697	131,677	429,777
M	3	94,144	505,592	2,416	-	48	-	3,647	271,348	877,195
T	4	89,838	505,165	2,416	2,430	48	56,002	3,276	271,500	930,675
W	5	91,510	511,335	2,416	2,430	40	56,002	2,544	277,128	943,405
T	6	92,214	525,489	2,416	2,430	32	56,002	3,731	279,119	961,433
F	7	100,760	526,573	2,416	2,430	40	56,002	4,047	282,995	975,263
S	8	87,304	420,828	2,416	-	52	-	2,908	210,769	724,277
S	9	44,960	209,298	-	-	56	-	1,351	119,684	375,349
M	10	88,037	488,605	2,416	2,430	32	56,002	3,428	268,672	909,622
T	11	85,417	491,055	2,416	2,430	32	56,002	3,594	270,587	911,533
W	12	86,642	495,663	2,417	2,430	72	56,002	4,017	270,913	918,156
T	13	89,707	512,203	2,417	2,622	36	56,002	3,657	277,353	943,997
F	14	98,135	513,827	2,417	2,430	56	56,002	3,841	280,827	957,535
S	15	84,907	412,097	2,417	-	228	-	2,810	205,942	708,401
S	16	46,113	237,912	-	-	-	-	1,444	131,841	417,310
M	17	86,285	508,161	2,417	2,430	-	56,002	3,537	281,617	940,449
T	18	83,497	505,965	2,417	2,574	-	56,002	3,413	285,419	939,287
W	19	74,541	436,133	2,417	2,758	-	56,002	3,095	264,612	839,558
T	20	87,231	525,705	2,417	2,431	-	56,001	3,720	290,057	967,562
F	21	89,553	485,384	2,417	2,431	-	56,001	3,583	282,380	921,749
S	22	81,732	387,588	2,417	124	-	-	2,864	210,072	684,797
S	23	47,225	223,447	-	-	-	-	1,574	129,731	401,977
M	24	96,410	493,525	2,417	2,431	-	56,001	3,541	286,620	940,945
T	25	126,613	468,018	2,417	2,633	-	56,001	3,341	290,595	949,618
W	26**	304,216	282,721	2,417	2,431	-	56,001	3,364	269,471	920,621
T	27	400,454	197,446	2,417	2,431	-	56,001	3,909	285,110	947,768
F	28	463,837	141,689	2,417	2,431	-	56,001	3,583	287,168	957,126
S	29	397,147	79,820	2,417	-	-	-	3,178	210,798	693,360
S	30	246,786	37,591	-	-	-	-	1,624	133,205	419,206
M	31	504,064	93,634	2,417	2,431	-	56,001	4,044	282,502	945,093
TOTAL		4,372,706	11,674,490	60,417	49,824	908	1,120,032	95,676	7,459,312	24,833,365

* Legal Holiday. ** At 5:00 A.M., January 26, 1949 fare raised to 10¢.

TABLE XVII

Municipal Railway of San Francisco

DAILY RECORD OF PASSENGER TRAFFIC - SYSTEM

FEBRUARY, 1949

Date (1)	(2)	Cash Fares (3)	Registered Tokens (4)	Postal Employees (5)	Charter Passengers (6)	School Tickets (7)	Special Tickets (8)	Cal.Cable Transfers (9)	Local Transfers (10)	Total Passengers (11)
T	1	527,500	68,297	2,264	2,558	27,065	39	3,809	290,603	922,135
W	2	530,993	52,889	2,264	2,310	27,065	39	3,943	285,028	904,531
T	3	562,577	47,568	2,264	2,310	27,065	39	4,141	294,592	940,556
F	4	509,114	33,541	2,264	2,310	27,065	39	3,666	274,917	852,916
S	5	458,490	25,881	2,264	-	-	39	3,458	212,908	703,040
S	6	210,350	10,091	-	-	-	39	1,572	113,512	335,564
M	7	556,817	32,118	2,264	2,310	27,065	39	4,195	285,139	910,247
T	8	549,639	26,700	2,264	2,464	27,065	39	3,885	287,726	799,782
W	9	561,800	23,849	2,264	2,576	27,065	39	4,138	290,351	912,082
T	10	557,412	21,770	2,264	2,310	27,065	39	4,261	291,955	907,076
F	11	577,891	19,484	2,264	2,264	27,065	39	4,177	293,721	926,951
S	12	438,687	13,121	2,264	-	-	39	2,895	207,331	664,337
S	13	265,744	7,325	-	-	-	39	1,688	133,557	408,353
M	14	574,177	18,204	2,264	2,310	27,065	39	3,957	286,137	914,153
T	15	554,411	14,682	2,265	2,310	27,065	39	4,313	281,761	886,846
W	16	579,170	14,124	2,265	2,310	27,065	40	4,099	288,368	917,441
T	17	588,239	13,192	2,265	2,310	27,065	40	4,379	295,638	933,128
F	18	598,312	11,849	2,265	2,264	27,065	40	4,605	296,949	943,395
S	19	464,734	7,907	2,265	-	-	40	3,245	208,839	687,030
S	20	245,163	3,640	-	-	-	40	1,729	120,977	371,549
M	21	606,341	11,008	2,265	2,310	27,066	40	4,091	282,737	935,858
T	22*	279,159	3,673	-	-	-	40	1,569	134,277	418,718
W	23	586,577	10,261	2,265	2,310	27,066	40	4,159	286,006	918,684
T	24	578,166	9,169	2,265	2,309	27,066	40	4,359	289,488	912,862
F	25	591,178	8,318	2,265	2,309	27,066	40	4,133	289,663	924,972
S	26	450,906	5,297	2,265	-	-	40	2,986	198,923	660,417
S	27	278,459	3,058	-	-	-	40	1,751	134,165	417,473
M	28	587,214	8,577	2,265	2,309	27,066	40	4,195	287,968	919,634
TOTAL		13,869,220	525,893	52,083	44,555	514,240	1,105	99,398	6,943,236	22,049,730

*Legal Holiday.

Municipal Railway of San Francisco

VEHICLE MILES AND HOURS
AND
TOTAL PASSENGERS CARRIED

PERIOD DECEMBER 28, 1912 TO JUNE 30, 1948

Fiscal Year Ending	Vehicle Miles		Vehicle Miles		Total Passengers Carried
	Total	Per 100 Passengers	Total	Per 100 Passengers	
1913*	1,300,869	13.38	129,050	1.327	9,723,177
1914*	3,282,012	11.75	362,333	1.297	27,933,049
1915	3,112,910	12.62	368,841	1.495	24,670,130
1916	6,358,543	13.28	737,214	1.539	47,886,784
1917	5,317,270	14.67	580,717	1.603	36,234,723
1918	6,935,090	11.11	766,997	1.229	62,396,036
1919	7,212,763	12.15	779,746	1.314	59,341,253
1920	7,419,272	11.21	795,578	1.202	66,169,246
1921	7,538,737	10.78	806,761	1.153	69,960,834
1922	7,677,307	10.85	811,292	1.146	70,757,908
1923	8,148,703	11.07	853,157	1.159	73,633,760
1924	8,676,611	11.16	900,224	1.158	77,736,617
1925	8,897,271	11.14	921,280	1.153	79,900,645
1926	9,302,073	11.15	961,451	1.153	83,390,908
1927	9,428,522	11.28	975,949	1.167	83,603,652
1928	9,657,311	11.32	999,243	1.172	85,281,171
1929	9,903,754	11.56	1,028,345	1.200	85,683,664
1930	10,186,213	11.62	1,054,514	1.203	87,673,608
1931	10,114,999	11.86	1,042,925	1.223	85,250,762
1932	9,770,683	12.19	995,524	1.242	80,123,238
1933	9,251,492	12.88	918,120	1.278	71,815,286
1934	8,875,788	12.15	876,820	1.200	73,063,608
1935	8,937,287	11.33	883,914	1.121	78,849,085
1936	8,751,421	11.06	867,581	1.097	79,116,866
1937	8,763,838	10.85	872,873	1.081	80,754,084
1938	9,212,687	10.20	919,678	1.019	90,290,519
1939	9,810,068	9.11	1,003,126	.931	107,739,849
1940	10,058,316	9.04	1,049,720	.943	111,305,527
1941	10,266,038	9.43	1,064,439	.978	108,822,011
1942	10,389,525	9.12	1,083,008	.950	113,956,341
1943	11,322,394	7.92	1,191,164	.834	142,896,226
1944	12,100,522	7.23	1,278,151	.764	167,348,356
1945	24,811,168	8.40	2,678,453	.907	295,306,166
1946	29,454,947	9.04	3,197,392	.981	326,007,393
1947	30,063,299	9.55	3,263,950	1.037	314,623,064
1948	29,066,859	9.44	3,143,524	1.021	307,975,046

*Calendar year.

Municipal Railway of San Francisco

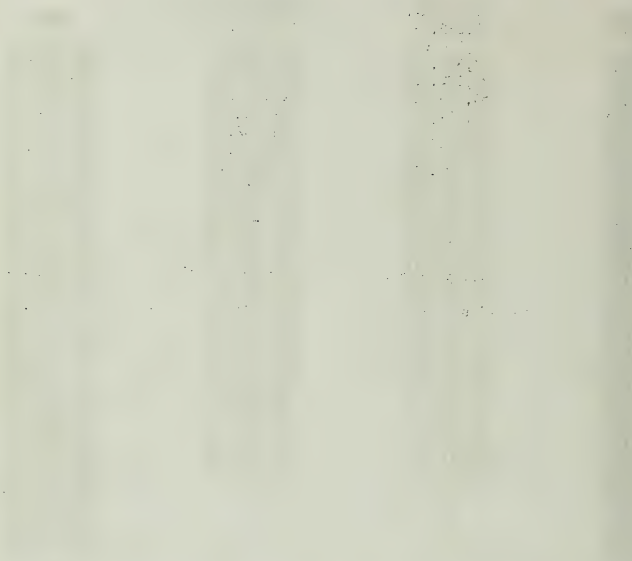
ANNUAL FARE PASSENGERS

CALENDAR YEARS 1920 TO 1948

Year	Municipal Railway	Market Street Railway	Total
1920	56,053,182	186,535,863	242,589,045
1921	57,864,042	188,819,289	246,683,331
1922	59,065,588	191,924,926	250,990,514
1923	62,161,869	196,515,450	258,677,319
1924	64,900,091	197,375,624	262,275,715
1925	67,695,431	198,277,586	265,973,017
1926	68,191,236	198,030,769	266,222,005
1927	69,084,098	196,555,997	265,640,095
1928	69,584,159	197,356,980	266,941,139
1929	72,431,399	194,428,544	266,859,943
1930	70,750,936	186,458,908	257,209,844
1931	67,227,560	174,389,774	241,617,334
1932	60,613,011	158,780,532	219,393,543
1933	56,464,777	150,942,403	207,407,180
1934	60,196,770	148,614,851	208,811,621
1935	61,918,477	149,774,919	211,693,396
1936	64,072,831	153,911,025	217,983,856
1937	67,280,657	143,209,742	210,490,399
1938	77,326,470	113,746,604	191,073,074
1939	88,120,745	95,563,767	183,684,512
1940	83,739,919	89,924,603	173,664,522
1941	82,937,510	89,854,617	172,792,127
1942	98,489,646	111,402,441	209,892,087
1943	125,011,516	124,700,490	249,712,006
*1944	168,723,351	94,910,795	263,634,146
1945	--	--	252,172,192
1946	--	--	231,604,626
1947	--	--	221,416,656
1948	--	--	212,338,948

*Market Street Railway prôperties acquired by Municipal Railway 9/29/44.

Above figures do not include California Street Cable System.



SUMMARY OF DAILY TRAFFIC
METROPOLITAN TRAFFIC DISTRICT OF SAN FRANCISCO
Typical Week Day, October, 1947

Period and Type of Vehicle	VEHICLES ENTERING Number (1)	VEHICLES ENTERING Percent (2)	VEHICLES LEAVING Number (3)	VEHICLES LEAVING Percent (4)	PERSONS ENTERING Number (5)	PERSONS ENTERING Percent (6)	PERSONS LEAVING Number (7)	PERSONS LEAVING Percent (8)
7 A.M. - 7 P.M.								
Automobiles	171,027	75.0	163,018	74.0	270,038*	50.3	258,573*	50.5
Local Transit	5,668	2.4	5,570	2.5	212,176	39.8	201,597	39.5
Taxi	9,332	4.0	9,175	4.0	-	-	-	-
Out of Town Bus	570	0.2	597	0.2	53,072**	9.9	50,661**	10.0
Trucks	42,148	18.4	42,580	19.3	-	-	-	-
TOTAL	228,745	100.0	220,940	100.0	535,286	100.0	510,831	100.0
Pedestrians					51,446		45,698	
7:30 A.M. - 8:30 A.M.								
Automobiles	26,620	84.0	12,107	73.7	41,017*	35.8	19,102*	57.7
Local Transit	685	2.2	514	3.1	54,726	48.0	11,697	35.4
Taxi	738	2.3	623	3.8	-	-	-	-
Out of Town Buses	95	0.3	39	0.2	18,678**	16.2	2,337**	6.9
Trucks	3,600	11.2	3,149	19.2	-	-	-	-
TOTAL	31,738	100.0	16,432	100.0	114,421	100.0	33,136	100.0
Pedestrians					6,907		3,890	
4:30 P.M. - 5:30 P.M.								
Automobiles	18,167	79.5	30,721	85.6	28,601*	60.5	47,585*	41.2
Local Transit	657	2.9	623	1.7	15,677	33.0	49,482	42.6
Taxi	882	3.9	1,028	2.8	-	-	-	-
Out of Town Buses	45	0.2	128	0.4	3,061**	6.5	18,769**	16.2
Trucks	3,103	13.5	3,145	9.5	-	-	-	-
TOTAL	22,854	100.0	35,645	100.0	47,339	100.0	115,836	100.0
Pedestrians					4,806		6,500	

* Includes Taxi passengers.
** Includes Railway and Ferry.

NOTE: Data taken from Cordon Count Data Report of Technical Committee of Administrative Transportation Planning Council.

TABLE XX

SUMMARY OF DAILY VEHICLE TRAFFIC BY 30 MINUTE PERIODS
METROPOLITAN TRAFFIC DISTRICT OF SAN FRANCISCO
Typical Weekday October, 1947

30 Min. Period Ending	E N T E R I N G						L E A V I N G					
	Passenger Autos	Taxi Cabs	Trucks	Local Transit Vehicles	Out of Town Buses	Total Vehicles Entering	Passenger Autos	Taxi Cabs	Trucks	Local Transit Vehicles	Out of Town Buses	Total Vehicles Leaving
7:30 am	9,073	253	866	270	34	10,496	4,301	261	780	258	43	5,643
8:00	14,443	367	1,460	334	44	16,648	6,827	301	1,077	247	19	8,471
8:30	12,177	371	2,140	351	51	15,090	5,280	322	2,072	267	20	7,961
9:00	9,646	377	2,264	294	33	12,614	5,192	352	2,120	270	23	7,957
9:30	6,576	354	2,086	244	26	9,286	4,526	359	2,304	253	19	7,461
10:00	6,162	377	2,060	181	20	8,800	4,511	357	2,161	208	21	7,258
10:30	5,811	341	2,235	183	19	8,589	4,959	283	2,340	174	12	7,768
11:00	5,933	328	2,174	177	18	8,630	4,942	310	2,224	178	19	7,673
11:30 am	5,943	342	2,182	176	21	8,664	5,177	320	2,316	177	12	8,002
12:00	5,961	379	2,053	182	16	8,591	5,700	370	2,079	167	19	8,335
12:30 pm	5,456	358	1,244	178	19	7,255	5,881	410	1,462	194	20	7,967
1:00	5,062	358	1,335	176	20	6,951	5,119	354	1,306	174	24	6,977
1:30	5,765	343	1,918	210	17	8,253	5,447	333	2,100	189	14	8,083
2:00	6,130	372	2,209	194	16	8,921	5,707	375	2,137	189	24	8,432
2:30	6,007	400	2,273	204	16	8,900	6,120	386	2,366	207	16	9,095
3:00	6,046	356	2,324	213	14	8,953	6,138	376	2,200	218	19	8,951
3:30	6,502	368	2,230	234	15	9,349	6,599	347	2,131	231	19	9,327
4:00	6,991	424	2,437	270	17	10,139	7,341	416	2,310	242	24	10,333
4:30	7,742	418	2,286	315	17	10,778	8,402	412	2,300	269	22	11,405
5:00	9,736	422	1,937	345	22	12,462	13,821	506	2,002	298	58	16,685
5:30	8,431	460	1,166	312	23	10,392	16,900	522	1,413	325	70	19,230
6:00	6,229	513	590	255	40	7,627	11,572	552	715	356	44	13,239
6:30	4,665	546	381	213	39	5,844	7,504	485	376	273	18	8,656
7:00	4,540	505	298	164	13	5,520	5,052	466	289	206	18	6,031
TOTAL	171,027	9,332	42,148	5,675	570	228,752	163,018	9,175	42,580	5,570	597	220,940

TABLE XXI

SUMMARY OF DAILY PERSON TRAFFIC BY 30 MINUTE PERIODS
METROPOLITAN TRAFFIC DISTRICT OF SAN FRANCISCO
Typical Weekday October, 1947

	ENTERING							LEAVING						
30 Min. Period Ending	Pas-senger Autos	Local Transit Vehicles	Out of Town Buses	R.R. or Ferries	Total Pas-sengers Entering	Pedes-trians	Total Persons Entering	Pas-senger Autos	Local Transit Vehicles	Out of Town Buses	R.R. or Ferries	Total Pas. sengers Leaving	Pedes-trians	Total Persons Leaving
7:30 am	14,003	18,021	1,253	2,228	35,505	1,862	37,376	6,855	6,011	1,179	909	14,954	1,149	16,103
8:00	22,177	29,179	1,975	6,702	60,033	3,476	63,509	10,699	6,560	328	647	18,234	2,159	20,393
8:30	18,840	25,547	2,141	7,860	54,388	3,431	57,819	8,403	5,137	387	975	14,902	1,731	16,633
9:00	15,151	15,834	1,222	4,024	36,231	2,916	39,147	8,327	3,729	329	301	12,686	1,878	14,564
9:30	10,412	7,761	728	1,161	20,062	1,610	21,672	7,331	2,387	254	520	10,492	1,325	11,817
10:00	9,826	6,995	634	1,792	19,247	1,612	20,859	7,315	2,540	371	277	10,503	1,140	11,643
10:30	9,242	6,778	577	463	17,060	1,806	18,866	7,878	2,523	298	451	11,150	1,393	12,543
11:00	9,403	7,176	544	1,231	18,354	1,786	20,140	7,898	2,887	446	343	11,574	1,333	12,907
11:30 am	9,462	6,059	533	775	16,829	1,730	18,559	8,258	3,415	351	791	12,815	1,558	14,373
12:00	9,517	5,842	528	769	16,656	2,391	19,047	9,136	3,561	505	266	13,468	1,861	15,329
12:30 pm	8,753	5,415	576	345	15,089	2,910	17,999	9,447	4,593	477	690	15,207	2,754	17,961
1:00	8,153	5,739	503	530	14,925	2,247	17,172	8,224	3,998	430	363	13,015	2,162	15,177
1:30	9,170	6,224	345	494	16,233	1,999	18,232	8,690	4,821	404	547	14,462	1,645	16,107
2:00	9,761	5,774	377	634	16,546	1,847	18,393	9,150	5,460	526	544	15,680	1,527	17,207
2:30	9,600	5,369	403	297	15,669	1,668	17,337	9,773	6,569	451	652	17,445	1,506	18,951
3:00	9,601	5,787	358	494	16,240	1,981	18,221	9,729	7,664	591	492	18,476	1,685	20,161
3:30	10,288	6,875	390	545	18,098	2,393	20,491	10,430	8,538	559	1,155	20,682	2,239	22,921
4:00	11,066	7,876	422	464	19,828	2,185	22,013	11,651	10,658	848	954	24,111	2,207	26,318
4:30	12,264	6,841	404	696	20,205	2,035	22,240	13,222	13,818	882	2,448	30,370	2,332	32,702
5:00	15,251	8,317	662	738	24,968	2,429	27,397	21,451	21,621	2,322	4,536	49,930	2,875	52,805
5:30	13,350	7,360	738	923	22,371	2,377	24,748	26,134	27,861	2,521	9,390	65,906	3,625	69,531
6:00	10,128	4,426	1,082	863	16,499	1,771	18,270	18,193	27,129	1,687	4,108	51,117	2,552	53,669
6:30	7,836	3,666	1,055	954	13,511	1,418	14,929	12,009	13,948	590	1,416	27,963	1,723	29,686
7:00 pm	7,584	3,129	368	458	11,539	1,366	12,905	8,310	6,319	410	740	15,779	1,339	17,118
TOTAL	270,838	211,990	17,818	35,440	536,086	51,246	587,332	258,513	201,747	17,146	33,515	510,921	45,698	556,619

TABLE XXII

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA
TRANSPORTATION DEPARTMENT
Engineering Division

ELECTRIC RAILWAY AND URBAN BUS TRAVEL AND REVENUES
Comparative Report for the Month of October, 1948

Name of Street Railway or Local Bus Company	Fare Passengers 1948	Fare Passengers 1947	Percent Increase	Passenger Revenue 1948	Passenger Revenue 1947	Percent Increase
Bakersfield & Kern Electric Rwy.	514,975	537,225	4.1*	$ 36,374.73	$ 36,993.43	1.7*
California Street Cable RR. Co.	633,395	633,216	0.03	63,009.50	62,991.60	0.03
Fresno City Lines, Inc.	699,947	798,532	12.3*	58,373.07	52,872.96	10.4
Glendale City Lines, Inc.	434,042	513,075	15.4*	33,815.65	31,762.37	6.5
Inglewood City Lines	259,018	298,122	13.1*	23,315.64	22,430.81	3.9
Key System - Transit	7,846,472	8,170,982	4.0*	783,274.51	787,356.15	0.5*
Los Angeles Motor Coach Co.	4,524,351	5,060,460	10.6*	403,118.65	397,111.31	1.5
Los Angeles Transit Lines	25,079,933	28,930,207	13.3*	1,887,580.52	1,941,345.30	2.8*
Municipal Ry. of San Francisco	18,364,504	18,463,893	0.5*	1,532,656.68	1,611,416.78	4.9*
Pacific Electric Railway - Bus	1,195,126	1,323,383	9.7*	210,709.93	177,957.21	18.4
Pacific Electric Railway - Rail	3,575,136	4,972,184	28.1*	464,431.35	444,204.76	4.6
Pasadena City Lines, Inc.	1,236,091	1,476,134	16.3*	79,701.42	74,613.71	6.8
Sacramento City Lines, Inc.	1,446,104	1,425,374	1.5*	112,260.31	108,166.42	3.8
San Diego Electric Railway	5,527,029	6,494,053	14.9*	485,107.51	527,385.55	8.0*
San Jose City Lines, Inc.	1,171,339	1,231,312	4.9*	75,400.08	64,727.72	16.5
Stockton City Lines, Inc.	792,887	832,663	4.8*	61,639.73	54,331.75	13.5
TOTAL	73,300,349	81,160,815	9.7*	6,310,769.28	6,395,667.83	1.3*
SELECTED INTERURBAN LINES						
Key System - Bridge	2,532,159	2,982,542	15.1*	497,186.45	545,335.93	8.8*
Pacific Electric Rwy. - Bus	1,967,260	2,156,708	8.8*	432,814.16	417,095.74	3.8
Pacific Electric Rwy. - Rail	1,524,716	1,885,525	19.1*	372,637.87	390,981.15	4.7*
TOTAL	6,024,135	7,024,775	14.2*	1,302,638.48	1,353,412.82	3.8*
GRAND TOTAL	79,324,484	88,185,590	10.0*	7,613,407.76	7,749,080.65	1.8*

*Decrease.

TABLE XXIII

COMBINED REPORT FOR THE MONTH OF OCT. 1948

Line	Fare Passengers 1948	Fare Passengers 1947	Percent Increase	Passenger Revenue 1948	Passenger Revenue 1947	Percent Increase
KEY SYSTEM						
Bridge	2,532,159	2,982,542	15.1*	497,186.45	545,335.93	8.8*
Transit-	7,486,472	8,170,982	4.0*	783,274.51	787,356.15	0.5*
TOTAL	10,018,631	11,153,524	10.2*	1,280,460.96	1,332,692.08	3.9*
PACIFIC CITY LINES						
Glendale City Lines, Inc.	434,042	513,075	15.4*	33,815.65	31,762.37	6.5
Pasadena City Lines	1,236,091	1,476,134	16.3*	79,701.42	74,613.71	6.8
Sacramento City Lines	1,446,104	1,425,374	1.5*	112,260.31	108,166.42	3.8
San Jose City Lines, Inc.	1,171,339	1,231,312	4.9*	75,400.08	64,727.72	16.5
Stockton City Lines, Inc.	792,887	832,663	4.8*	61,639.73	54,331.75	13.5
TOTAL	5,080,463	5,478,558	7.3*	362,817.17	333,601.97	8.8
PACIFIC ELECTRIC RAILWAY COMPANY						
Local - Bus	1,195,126	1,323,383	9.7*	210,709.93	177,957.21	18.4
Local - Rail	3,575,136	4,972,184	28.1*	464,431.35	444,204.76	4.6
Interurban - Bus	1,967,260	2,156,708	8.8*	432,814.16	417,095.74	3.8
Interurban - Rail	1,524,716	1,885,525	19.1*	372,637.87	390,981.15	4.7*
TOTAL	8,262,238	10,337,800	20.1*	1,480,593.31	1,430,238.86	3.5
LOS ANGELES TRANSIT LINES						
Motor Coach	4,524,351	5,060,460	10.6*	403,118.65	397,111.31	1.5
Transit	25,079,933	28,930,207	13.3*	1,887,580.52	1,941,345.30	2.8*
TOTAL	29,604,284	33,990,667	12.9*	2,290,699.17	2,338,456.61	2.0*

*Decrease.

XXIII (Cont'd.)

Municipal Railway of San Francisco

SERVICE DATA BY LINES - WEEKDAYS

Line	Length Of Route	SCHEDULE SPEED Day	SCHEDULE SPEED P.M.Peak	SCHEDULE SPEED Night	MAX. AND MIN. HEADWAYS Peak A.M.	MAX. AND MIN. HEADWAYS Peak P.M.	MAX. AND MIN. HEADWAYS Base Day	MAX. AND MIN. HEADWAYS Base Night	VEHICLES IN SERVICE Base Day	VEHICLES IN SERVICE Base Night	VEHICLES IN SERVICE Peak A.M.	VEHICLES IN SERVICE Peak P.M.	Ratio P.M. Peak to Base
RAIL LINES													
B	6.89	9.96	9.96	11.48	5-4	5-4	6	12	15	12	21	24	1.60
C	5.74	9.70	9.70	11.88	5-4	5-4	6	-	13	MC	18	20	1.53
D	4.24	8.77	8.77	10.17	7-5½	5-4½	8½	-	8	MC	11	13	1.62
F	3.13	9.52	8.94	10.68	3-2½	2½-2	4½	6	15	8	27	36	2.40
H	6.84	9.33	9.12	10.01	10½-7	3½	5	10	17	12	28	28	1.64
J	4.56	8.82	8.29	10.13	4-3½	4	6	6	10	8	17	18	1.80
K	8.29	10.75	10.31	12.21	7-2½	5-3½	6½	9	14	10	21	23	1.64
L	8.16	10.70	10.25	12.01	6-2½	4½-2	6½	9	17	9	28	30	1.76
M	8.46	10.40	9.95	10.60	14½-12½	15-13½	14	-	7	MC	7	7	1.00
N	7.28	10.37	9.48	11.19	5-2½	4½-2	5½	9	15	11	30	30	2.00
1	7.34	9.44	8.93	11.28	8½-8	10-8½	12½	-	8	MC	11	12	1.50
2	7.39	9.44	8.93	11.37	8½-8	10-8½	12½	-	8	MC	11	13	1.62
3	2.00	6.32	5.58	8.00	4½-4	6-5	6	-	7	MC	9	14	2.00
8	3.31	8.83	8.11	10.18	-	5½	8½-5	-	-	-	9	9	-
31	5.69	10.34	9.75	11.77	5-3	6	5-2	-	12	MC	22	22	1.62
MOTOR COACH LINES													
3	2.46	11.41	11.41	11.41	6½-6	6-5½	9	15	3	2	5	5	1.66
4	3.88	13.30	12.25	13.30	10½	10½-9½	13	20	3	2	4	4	1.33
5	7.05	10.71	10.44	12.44	9-6	9-4½	8	8½	20	7	32	33	1.65
6	5.90	9.18	9.08	11.06	7½-6	7-5½	10½	15	8	2	12	16	2.00
7	8.00	10.91	10.67	12.97	10-3	10-5	10½	13	16	6	34	38	2.37
9	5.10	11.13	10.37	13.02	2-1½	2-1½	2½	-	26	-	41	42	1.61
10	8.30	11.86	11.86	12.45	7	7	9	12½-14½	8	8	13	13	1.62
11	4.94	10.40	9.72	12.35	6-4	5-4½	8	10	8	2	14	14	1.75
14	10.92	11.24	10.73	12.76	2½-2	3-2½	4	6-7	17	17	31	39	2.29
15	10.38	11.64	11.22	12.84	2½	2	3	7½	24	13	39	41	1.70
16	7.30	13.20	13.20	14.02	5-3	5-4	10-7	13	7	6	16	19	2.71
17	2.00	14.12	14.12	14.12	20	20	20	-	1	1	1	-	1.00
18	2.30	13.80	13.80	13.80	12	12	12	24	1	1	2	2	2.00
19	4.56	10.12	10.12	11.15	3	2½	4	7½	9	8	17	19	2.11
20	4.52	10.71	10.71	11.54	5½	5	10	14	5	4	7	8	1.60
21	5.25	9.26	9.00	10.86	5-2½	3-2	5½	9	16	6	34	38	2.37

(Continued on following page.)

TABLE XXIV

Line	Length of Route	Day	P.M. Peak	Night	MAX. AND MIN. HEADWAYS Peak A.M.	Peak P.M.	Base Day	Base Night	VEHICLES IN SERVICE Base Day	Base Night	Peak A.M.	Peak P.M.	Ratio P.M. Peak To Base
MOTOR COACH LINES - (Continued)													
23	3.70	12.35	12.35	-	20	20	20	16	2	1	2	2	1.00
24	3.55	9.68	9.23	11.21	5	5	7	10½	7	6	10	10	1.43
25	6.30	10.66	10.66	12.00	6½-6	6½	11	13	4	5	7	7	1.75
26	8.10	13.88	16.20	13.88	5-2½	7-4	4½	15	7	7	19	19	2.71
27	6.10	12.30	12.30	12.30	7½-6½	6½	11	20	6	1	10	10	1.66
28	11.70	13.90	13.90	15.38	7	14	14	16	7	7	11	11	1.57
29	3.39	14.44	14.44	-	12	12	12	-	2	-	4	3	1.50
32	3.40	10.20	10.20	11.33	7-5	7-6½	11	-	4	-	8	7	1.75
34	1.12	11.20	11.20	11.20	8	8	8	8	1	1	1	1	1.00
35	3.71	10.60	10.60	10.60	9½	8	12	12	4	2	5	8	2.00
36	4.40	12.00	12.00	12.00	12	12	12	24	3	2	4	4	1.33
37	1.67	13.36	13.36	13.36	20	20	20	20	1	1	1	1	1.00
38	2.20	14.66	14.66	14.66	12	12	20	20	1	1	2	2	2.00
39	1.03	10.30	10.30	10.30	20	20	20	20	1	1	1	1	1.00
42	6.81	10.10	10.52	12.88	22-1	5½	13½	21	6	3	9	16	2.66
43	3.42	11.72	11.72	11.72	13	13	20	20	2	2	3	3	1.50
44	0.80	8.00	8.00	-	15	15	15	-	1	-	1	1	1.00
50	4.42	13.26	13.26	13.26	15	15	15	22	3	2	3	4	1.33
51	5.10	13.30	13.30	13.30	13-7	11-4	17	17	3	3	6	7	2.33
52	1.25	12.50	12.50	12.50	7½	7½	15	15	1	1	2	2	2.00
53	1.75	10.50	10.50	10.50	12	12	12	12	2	2	2	2	1.00
54	5.20	13.00	11.28	14.42	6½	6	30	25	2	2	13	13	6.50
55	2.35	9.40	9.40	9.40	6	5	12	18	3	2	6	8	2.66
57	3.70	14.80	14.80	-	10	5	-	-	-	-	8	9	-
TROLLEY COACH													
22	5.82	10.35	10.35	11.94	2	2	3½	4½-5	21	21	37	37	1.57
33	5.09	11.54	11.54	12.20	5	5	6	14	6	5	11	11	1.83
41	7.14	10.09	10.09	11.43	4-2	3-2½	7-6	12	12	9	34	32	2.66
CABLE CAR													
59	1.11	6.04	6.04	6.76	14-6	6-4	6	12-8	6	6	6	9	1.50
60	2.23	6.37	6.37	6.69	8-6½	6-3	6-5	12-8	8	8	8	13	1.62

Municipal Railway of San Francisco

RECEIPTS PER HOUR BY TYPES OF SERVICE

	Fiscal Year 1947-1948		
		Passenger Receipts	
	Vehicle Hours	Amount	Per Vehicle Hour
STREET CARS	1,768,879		
Cash Fares and Registered Tokens		12,300,058	6.95
Total Passenger Receipts		12,551,713	7.10
Total Receipts - All Sources		12,709,569	7.19
MOTOR COACHES	1,149,117		
Cash Fares and Registered Tokens		4,298,241	3.74
Total Passenger Receipts		4,409,213	3.84
Total Receipts - All Sources		4,444,594	3.87
TROLLEY COACHES	143,536		
Cash Fares and Registered Tokens		644,593	4.49
Total Passenger Receipts		658,045	4.58
Total Receipts - All Sources		662,251	4.61
CABLE CARS	81,992		
Cash Fares and Registered Tokens		543,007	6.62
Total Passenger Receipts		552,551	6.74
Total Receipts - All Sources		555,016	6.77
SYSTEM OPERATIONS	3,143,524		
Cash Fares and Registered Tokens		17,785,899	5.66
Total Passenger Receipts		18,171,522	5.78
Total Receipts - All Sources		18,371,431	5.84

TRANSIT PASSENGERS BY TYPE OF VEHICLE

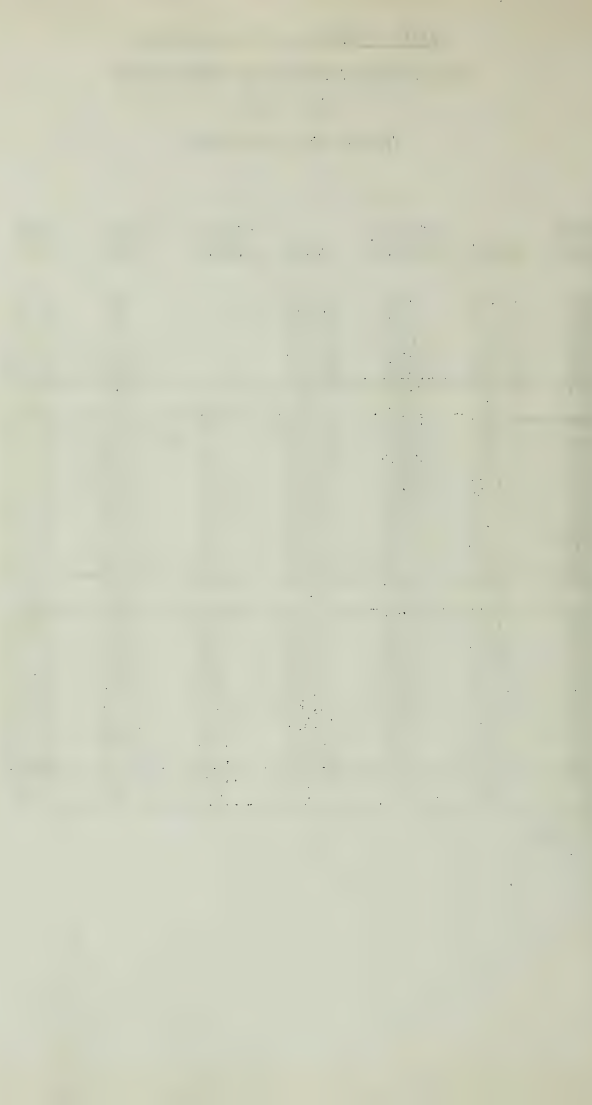
TOTAL TRANSIT OPERATIONS OF UNITED STATES

1922 - 1947

(Figures are in Millions)

Caldndar Year	Surface	Subway & Elevated	Total	Trolley Coach	Motor Coach	Grand Total
1922	13,389	1,942	15,331		404	15,735
1923	13,569	2,081	15,650		661	16,311
1924	13,105	2,207	15,312		989	16,301
1925	12,903	2,264	15,167		1,484	16,651
1926	12,875	2,350	15,225		2,009	17,234
1927	12,450	2,451	14,901		2,300	17,201
%	73	14	87		13	100
1928	12,026	2,492	14,518	3	2,468	16,989
1929	11,787	2,571	14,358	5	2,622	16,985
1930	10,513	2,559	13,072	16	2,479	15,567
1931	9,175	2,408	11,583	28	2,313	13,924
1932	7,648	2,204	9,852	37	2,136	12,025
1933	7,074	2,133	9,207	45	2,075	11,327
1934	7,394	2,206	9,600	68	2,370	12,038
1935	7,276	2,236	9,512	96	2,618	12,226
1936	7,501	2,323	9,824	143	3,179	13,146
1937	7,161	2,307	9,468	289	3,489	13,246
%	54	17	71	2	27	100
1938	6,545	2,236	8,781	389	3,475	12,645
1939	6,171	2,368	8,539	445	3,853	12,837
1940	5,943	2,382	8,325	534	4,239	13,098
1941	6,081	2,421	8,502	652	4,931	14,085
1942	7,290	2,566	9,856	899	7,245	18,000
1943	9,150	2,656	11,806	1,175	9,019	22,000
1944	9,516	2,621	12,137	1,234	9,646	23,017
1945	9,426	2,698	12,124	1,244	9,886	23,254
1946	9,027	2,835	11,862	1,311	10,199	23,372
1947	8,096	2,756	10,852	1,356	10,332	22,540
%	36	12	48	6	46	100

ATA Data.



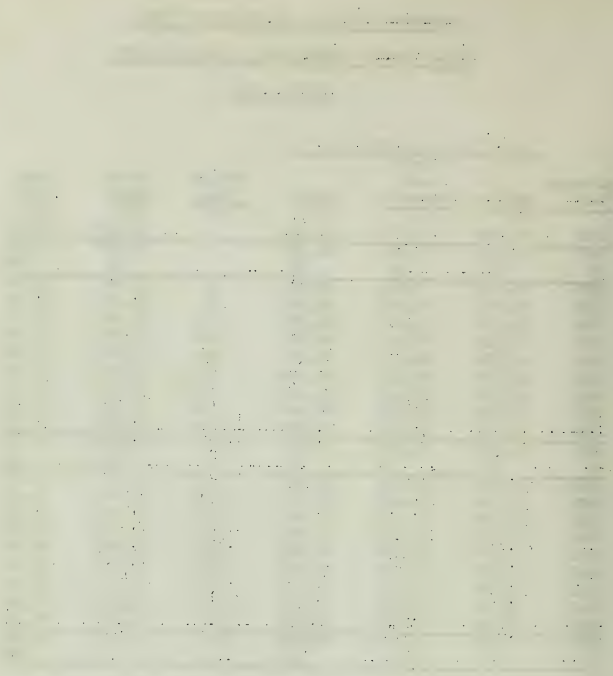
PASSENGER VEHICLES IN SERVICE BY TYPES

TOTAL TRANSIT OPERATIONS OF UNITED STATES

1926 - 1947

Calendar Year	RAILWAY CARS			Trolley Coach	Motor Coach	Grand Total
	Surface	Subway and Elevated	Total			
	(1)	(2)	(3)	(4)	(5)	(6)
1926	62,857	8,909	71,766	-	14,400	86,166
1927	61,379	8,957	70,336	-	18,000	88,336
%	69	10	79		21	100
1928	58,940	9,611	68,551	41	19,700	88,292
1929	56,980	9,983	66,963	57	21,100	88,120
1930	55,150	9,640	64,790	173	21,300	86,263
1931	53,120	9,638	62,758	225	20,700	83,683
1932	49,500	10,434	59,934	269	20,200	80,403
1933	47,700	10,424	58,124	310	20,200	78,634
1934	43,700	10,418	54,118	441	22,200	76,759
1935	40,050	10,416	50,466	578	23,800	74,844
1936	37,180	10,923	48,103	1,136	26,800	76,039
1937	34,180	11,032	45,212	1,655	27,500	74,367
%	46	15	61	2	37	100
1938	31,400	11,205	42,605	2,032	28,500	73,137
1939	29,320	11,052	40,372	2,184	32,600	75,156
1940	26,630	11,032	37,662	2,802	35,000	75,464
1941	27,092	10,578	37,670	3,029	39,300	79,999
1942	27,230	10,278	37,508	3,385	46,000	86,893
1943	27,250	10,255	37,505	3,501	47,100	88,106
1944	27,180	10,105	37,285	3,561	48,400	89,246
1945	26,680	10,075	36,755	3,716	49,670	90,141
1946	24,730	9,232	33,962	3,916	52,450	90,328
1947	21,607	9,174	30,781	4,632	56,917	92,330
%	23	10	33	5	62	100

ATA Data



PASSENGER VEHICLES AND ROUTE MILES BY TYPES

TOTAL TRANSIT OPERATIONS OF UNITED STATES

SEGREGATED BY POPULATION GROUPS

YEAR OF 1947

	Railway Cars (1)	Trolley Coach (2)	Motor Bus (3)	Grand Total (4)
PASSENGER VEHICLES				
Subway and Elevated	9,174	-	-	9,174
Surface Lines: (Population Group)				
Over 1,000,000	8,778	322	10,572	19,672
500,000-1,000,000	5,868	686	6,847	13,401
250,000-500,000	3,751	2,232	8,150	14,133
100,000-250,000	677	797	10,266	11,740
50,000 - 100,000	834	387	7,917	9,138
Less than 50,000	524	208	7,723	8,455
Suburban and Other-	1,175	-	5,442	6,617
Total	30,781	4,632	56,917	92,330
ROUTE MILES				
Subway and Elevated	1,252	-	-	1,252
Surface Lines: (Population Groups)				
Over 1,000,000	2,820	126	6,340	9,286
500,000-1,000,000	2,100	210	3,680	5,990
250,000-500,000	1,860	1,374	9,880	13,114
100,000-250,000	690	617	11,700	13,007
50,000-100,000	710	317	8,400	9,427
Less than 50,000	200	153	5,890	6,243
Suburban and Other	5,370	-	49,460	54,830
Total	15,002	2,797	95,350	113,149

ATA Data.

Municipal Railway of San Francisco

PASSENGER EQUIPMENT ASSIGNMENT TO OPERATING DIVISIONS

Type Vehicle	Location	Max. Vehicle Capacity	NUMBER OF VEHICLES January 10, 1949 Sch.	Total	Spares	January 17, 1949 Sch.	Total	Spares
Rail Cars	Geary Street	(4) 136	75	94	19	127	(4) 145	18
	Geneva	88	(1) 76	81	5	(1) 78	86	8
	Sutro	107	82	93	11	94	107	13
	Potrero & 17th	-	(3) 136	150	14	-	-	-
	TOTAL		369	418	49	299	338	39
Trolley Coaches	Potrero & 17th	(6) 250	46	58	12	78	80(5)	2
Buses	24th & Utah	(2) 130	155	170	15	148	153	5
	McAllister	130	125	130	5	125	130	5
	Ocean	(7) 150	131	149	18	195	202	7
	TOTAL		411	449	38	468	485	17
Cable Cars	Wash-Mason	40	22	27	5	22	27	5

(1) No service change on January 17, however, type of car to be changed.
(2) Not enough parking area to house coaches operated from this point. Overflow now parked on city streets.
(3) All rail cars out on January 15th, 1949.
(4) Owl cars and cars at Main Shops (for overhaul and heavy repair) permit higher number of cars to be assigned to this location than actual max. capacity.
(5) New Trolley Coaches now being received (part of orders for total of 190), will increase this amount in immediate future.
(6) Now being remodeled for Trolley Coaches - ultimate capacity (185 lower level. (65 upper level.
(7) Plan to enlarge storage yard for 70 additional coaches - under Rehabilitation Plan (Bond Issue.)

Municipal Railway of San Francisco

RAIL PASSENGER CARS AS OF MARCH 1st, 1949

Type	Car Numbers	No.	Seat Cap.	Weight Tons	MOTORS Type	MOTORS HP	BODY Length	BODY Width	BODY Height	Year Received	Approx. Age Years	Cost Each
A	1 to 43	43	48	25.0	306CA	60	47'1"	8'6"	11'9"	1912-13	37-36	$ 8,746
B	44-49, 51-168	124	50	24.0	306CA	60	47'1"	9'2½"	12'3"	1914	35	7,700
K	169-188	20	50	25.5	306CV	65	47'1"	9'2½"	12'2"	1923	26	17,502
L	189 to 213	25	50	25.5	306CA	60	47'1"	9'2"	12'2"	1927-28	22-21	21,161
C	1001 to 1003	3	60	19.6	1198	55	50'5"	9'0"	10'1"	1939	10	22,002
C	1004 and 1005	2	60	19.6	1432C	55	50'5"	9'0"	10'1"	1939	10	22,002
C	1006 to 1015	10	60	20.1	1220E1	55	50'5"	9'0"	10'0-3/8	1948	1	27,518
	100 & 400 Series	14	46	24.3	216E	50	47'0"	8'9"	--	1911	38	20,197
	200 & 600 Series	56	50	25.1	216E	50	47'0"	9'0"	--	1913	36	19,347
	819 Series	1	50	19.5	90	50	47'0"	9'0"	--	1923	26	16,500
	916 Series	1	50	20.0	532	50	47'0"	8'9"	--	1930	19	16,500
	900 Series	38	50	22.9	90	50	47'0"	8'9"	--	1931-32	19-18	17,611
	TOTAL	337										
Cable	501 to 527	27	29	6.1			27'0"	7'10½"	--	1893		5,578

TABLE XXX

Municipal Railway of San Francisco

TROLLEY COACH EQUIPMENT
ON HAND AND ON ORDER AS OF JANUARY 17, 1949

Vehicle Numbers	No.	Seat Capacity	Weight Tons	MANUFACTURER Body	Motor	Control	Year Received	Approx. Age Years	Cost Each
51 to 54, 59	5	37	9.7	J. G. Brill	General Electric	General Electric	1935	14	(c)$13,694
55 to 58	4	37	9.7	J. G. Brill	Westinghouse	Westinghouse	1935	14	(c) 13,694
501 to 504	4	40	10.0	St. Louis Car Co.	Westinghouse	Westinghouse	1941	8	(a) 13,037
505 to 509	5	40	10.0	St. Louis Car Co.	General Electric	General Electric	1941	8	(a) 13,037
510 to 525	16	40	10.3	St. Louis Car Co.	Westinghouse	Westinghouse	1948	1	(b)(15,966 (15,986
526 to 529	24	40	8.9	Marmon Herrington	General Electric	General Electric	1948	1	(b)(19,286 (19,594
	*100	44		Marmon Herrington	"				
	90	44		Twin Coach					
	**100	44							
TOTAL	348								

(a) Includes fare boxes.
(b) Excludes fare boxes and tires.
(c) Excludes tires.

*On order.
**Plan to order (1949)

TABLE XXXI

Municipal Railway of San Francisco

MOTOR COACH EQUIPMENT AS OF JANUARY 17, 1949

Vehicle Number	No.	Make	Model	Seat Capacity	Tire Size	Year Received	Approx. Age Years	Cost Each	Average M.P.G. October 1948
121	1	G.M.C.	TG 36	36	900-20	1940	9	$ 10,916	2.88
122	1	"	TG 36	36	900-20	1940	9	11,227	2.88
151 to 159	9	"	TG 36	36	10.00-20	1941	8	12,105	1.95
160 to 166	7	"	TG 36	36	10.00-20	1942	7	13,328	1.95
201 to 207	7	"	TG 32	32	9.00-20	1940	9	9,513	3.33
301-303, 305-311	10	"	TD 36	36	9.00-20	1940	9	13,000	3.51
312 to 327	16	"	TDH505	44	10.00-20	1942	7	6,784	3.28
401 to 430	30	"	TDH502	37	10.00-20	1941	8	12,650	2.82
431 to 433	3	"	TDH502	37	10.00-20	1942	7	13,534	2.82
041 to 044	4	White	784	32	10.00-20	1938	11	10,161	2.66
045 to 050	6	"	784	32	10.00-20	1938	11	10,477	2.66
051 to 062	12	"	784	32	10.00-20	1939	11	10,477	2.66
063 to 072	10	A.C.F.	26S	26	9.00-18	1941	8	7,933	4.09
073 to 074	2	"	31S	31	9.00-18	1941	8	9,969	3.22
075 to 078	4	White	798	44	11.00-20	1944	5	12,362	2.37
079 to 088	10	"	798	44	11.00-20	1945	4	12,351	2.37
089 to 0105	17	"	798	44	11.00-20	1945	4	12,472	2.37
0106 to 0125	20	"	798	44	11.00-20	1945	4	12,429	2.37
0126 to 0155	30	"	798	44	11.00-20	1946	3	13,024	2.37
0156 to 0165	10	"	44D	44	(F11.00-20) (R10.00-20)	1947	2	15,186	1.64
0166 to 0195	30	"	798	44	11.00-20	1947	2	15,810	2.37
0196 to 0304) 0306 to 310, 314)	115	"	798	44	11.00-20	1948	1	16,135	
0305, 0311, 0312) 0313, 0315-0404)	94	"	798	44	11.00-20	1948	0	16,285	
0405-0452	50	"	798	44	11.00-20	1948	0	16,027	
TOTAL	498								

TABLE XXII

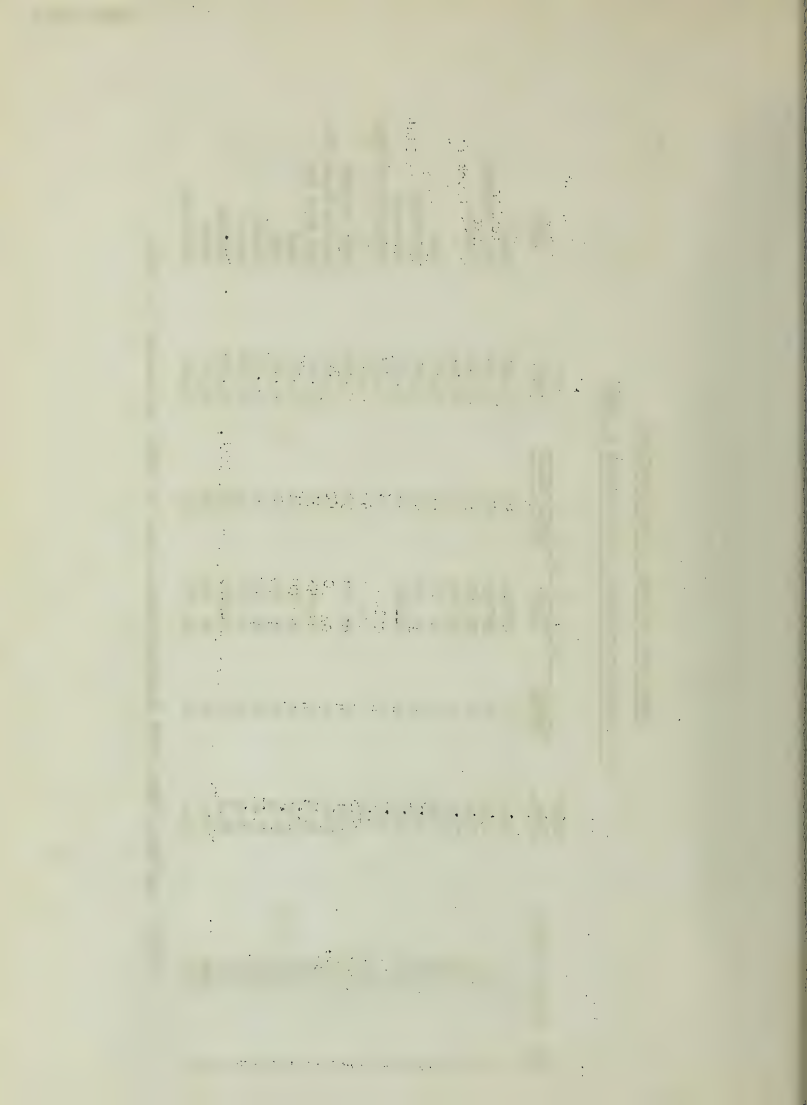
Municipal Railway of San Francisco

RAIL SERVICE EQUIPMENT AS OF JANUARY 1, 1949

No.	Vehicle Number	Weight Tons	MOTOR Number	MOTOR Type	MOTOR Horse Power	Cost Each	Type
1	C-1	20.0	4	W306CA	60	$ 6,946	Tower
1	C-2	11.0	2	W306CA	60	6,707	Rail Grinder
1	0507	25.0	4	GE 80	50	13,006	Wrecker
1	0103	11.2	2	GE1000	35	8,153	"
1	0601	9.8	2	GE 58	35	6,571	Sand
1	0925	27.8	4	GE 90	50	13,965	Switching
1	0106	20.7	4	GE1000	35	12,315	Delivery
1	04	6.7	-	--	--	2,337	Double Truck Flat
1	0928	8.4	-	--	--	4,675	" " "
1	0109	11.8	2	GE 90	50	8,282	Rail Grinder
1	0116	10.1	-	--	--	8,259	Double Truck Flat
1	0201	24.6	4	GE1000	35	15,662	Oil Tank Car
1	0929	27.6	4	GE 90	50	15,058	Dump
2	0915, 0916	28.4	4	GE 90	50	16,720	Dump
1	0920	27.8	4	GE 90	50	15,206	Gravel
1	0130	34.3	4	GE 58	35	21,198	Crane
1	0131	27.8	4	GE1000	35	17,579	Derrick
1	0304	27.4	4	GE 90	50	18,711	Tower
1	0927	21.2	4	GE 58	35	12,266	Switching

NOTE: Cars 0508, 0606, 0608 abandoned between June 30, 1948, and January 17, 1949.

TABLE XXXIII

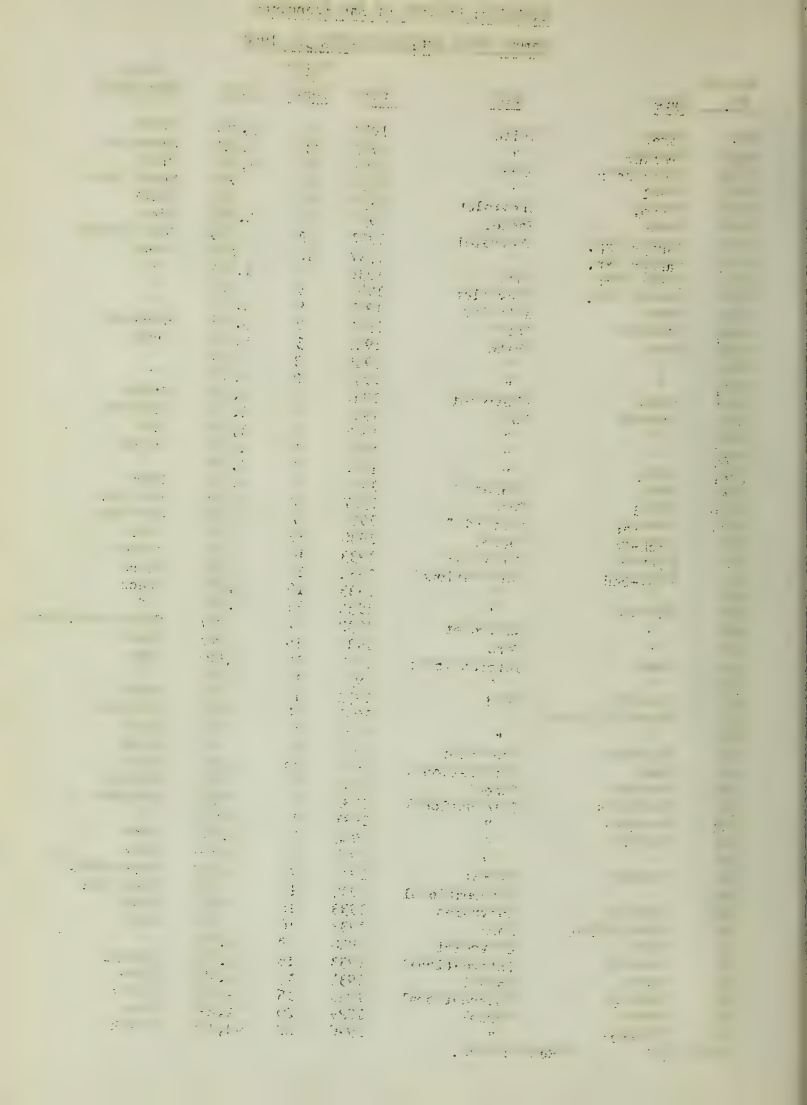


Municipal Railway of San Francisco

MOTOR TRUCK EQUIPMENT-JUNE 30, 1948

Vehicle No.	Type	Make	Year	Approx. Age Years	Cost	Using Department
003	Tower	White	1937	12	$3,859	Track
0012	Wrecker	"	1927	22	5,800	Carhouse
0014	Compressor	Dodge	1927	22	2,127	Track
0025	Panel	"	1935	14	900	Money Room
0027	Canopy	Chevrolet	1935	14	689	Track
0028	Tower	Fageol	1937	12	4,855	Line
0029	Canopy Exp.	Chevrolet	1937	12	665	Utah Garage
0033	Canopy Exp.	"	1937	12	689	Track
0037	Comb. Dump	Mack	1938	11	1,993	"
0039	Canopy Exp.	Chevrolet	1940	9	747	"
0040	Dump	Auto-Car	1940	9	4,830	"
0044	Wrecker	White	1942	7	3,084	Carhouse
0048	Dump	White	1946	3	5,156	Track
0049	"	"	1946	3	5,156	"
0061	"	"	1947	2	6,885	"
0062	Panel	Chevrolet	1947	2	1,416	Garage
0064	Pick-Up	Ford	1947	2	1,292	Carhouse
0065	"	"	1947	2	1,292	Line
0066	"	"	1947	2	1,292	Garage
0067	Panel	"	1947	2	1,292	"
0068	Dump	Diamond T	1947	2	4,162	Track
0069	Panel	Ford	1947	2	1,246	Fare Box
0071	Wrecker	Diamond T	1947	2	5,022	Carhouse
101	Pick-Up	Fageol	1930	19	1,709	Track
102	Pick-Up	Chevrolet	1933	16	622	Garage
103	Flat-Bed	International	1934	15	1,175	Store
106	"	"	1933	16	1,300	Track
107	Pick-Up	"	1934	15	1,154	"
108	"	Chevrolet	1932	17	857	Cable Mach. Dept.
109	"	Ford	1933	16	941	Track
111	Tower	International	1937	12	1,522	Line
112	"	"	1935	14	2,547	"
117	Pick-Up	Ford	1931	18	763	Track
121	Pick-Up (Closed)	"	1931	18	*239	Carhouse
123	"	"	1933	16	695	Track
124	Flat-Bed	Chevrolet	1934	15	709	Shops
129	Dump	International	1936	13	1,321	Track
130	Wrecker	Fageol	1931	18	664	Garage
132	Flat-Bed	International	1930	19	*337	Carhouse
133	Wrecker	"	1931	18	*629	"
136	Pick-Up	"	1934	15	1,157	Track
137	"	"	1934	15	1,270	Line
139	Wrecker	Fageol	1926	23	3,562	Ferry-Loop
140	"	International	1934	15	992	Cable Car
148	Pick-Up	Chevrolet	1933	16	*463	Track
149	Chassis-Box	Ford	1933	16	691	Shop
150	Panel	Chevrolet	1940	9	1,009	"
151	Pick-Up	International	1933	16	1,111	Garage
153	Tower	Fageol	1934	15	3,143	Line
154	Pick-Up	International	1934	15	1,088	Track
155	Tower	Fageol	1929	20	2,498	Line
157	Wrecker	"	1930	19	*1,116	Track

TOTAL (52) *Second Hand.



Municipal Railway of San Francisco

TRAILERS - JUNE 30, 1948

No.	Unit No.	Wheels	Type	Make	Year	Approx. Age Years	Cost
1	1	2	Trailmobile	Trailer Co. of America	1940	9	$ 378
1	2	2	"	"	1940	9	375
1	3	2	"	"	1940	9	375
1	4	2	"	"	1940	9	375
1	5	4	Portable Arc-Welder	Jamison	1939	10	864
1	6	4	Portable Compressor	Machinery & Drill Steel Co.	1938	11	2,723
1	7	4	" "	Westinghouse Pac. Coast	1924	25	2,366
1	8	4	" "	Machinery & Drill Steel Co.	1942	7	2,338
1	10	2	Rail pre-heater	Metal & Thermit Corp.	1934	15	390
1	11	2	" "	"	1934	15	525
1	12	2	(Home-Made)	Municipal Ry.	1927	29	(No Value)
1	13	4	Portable Compressor	S. Philpott	1945	4	2,039
1	14	2	" "	Western Machinery Co.	1946	3	1,742
1	15	2	" "	Ed. R. Bacon Co.	1947	2	2,788
1	16	4	Portable Welder	Clementine Co.	*1947	2	*568
1	17	2	Portable Compressor	La Roe	1947	2	2,485
1	-	4	Portable Trolley Reel Machine	Market Street Ry.	(a)		1,386
1	-		"	"	(a)		269
1	-		"	"	(a)		269
1	-		Pole Trailer	"	(a)		199
1	-	2	Rope "	"	(a)		207
7	-	2	Portable Tool Boxes	"	(a)		130
1	-		Portable Elec. Welder	"	(a)		610
29		(a)	Obtained from Market Street Railway in 1944, no record of year made.				

MISCELLANEOUS

1	-	Tractor	Ford	$ 850
1	-	"	"	*212
1	1	Section Motor Car	Fairmont	371
1	2	"	"	332

*Second Hand.

Municipal Railway of San Francisco

AUTOMOBILES - JUNE 30, 1948

Vehicle No.	Type	Make	Year	Approx. Age Years	Cost	Using Department
0030	Coupe	Chevrolet	1937	12	$ 692	Track
0036	Sedan	Oldsmobile	1938	11	1,092	Equipment
0038	Coupe	"	1940	9	897	Track
0041	"	Chevrolet	1942	7	1,026	Transportation
0042	"	"	1942	7	1,026	"
0043	Sedan	Oldsmobile	1942	7	1,247	"
0045	"	Chevrolet	1942	7	1,214	Claim
0046	"	Ford	1946	3	1,122	"
0047	"	"	1946	3	1,186	Transportation
0050	"	Plymouth	1946	3	1,396	Claim
0051	"	"	1946	3	1,396	Transportation
0052	"	"	1946	3	1,396	"
0053	Coupe	Ford	1946	3	1,127	"
0054	"	"	1946	3	1,127	"
0055	"	"	1946	3	1,127	"
0056	"	"	1946	3	1,127	"
0057	"	"	1946	3	1,127	"
0058	"	"	1946	3	1,127	"
0059	"	"	1946	3	1,127	"
0060	"	"	1946	3	1,127	"
0063	Sedan	Buick	1936	13	*150	Training
0070	" (7 Pas.)	Packard	1938	11	*394	General Mgr.
125	Coupe	Chevrolet	1936	13	744	Track
131	Sedan	Buick	1935	14	1,284	Equipment

TOTAL (24) *Second Hand.

MOTORCYCLES

7	Tricycle	Har.-Dav.	1937	12	632	Transportation
8	"	"	1937	12	632	"
9	"	"	1937	12	632	"
12	Side-Car	"	1940	9	669	"
15	"	"	1944	5	744	"
16	"	"	1944	5	744	"
17	"	"	1944	5	744	"

TOTAL (7)

Municipal Railway of San Francisco

PASSENGER EQUIPMENT REPLACEMENT SCHEDULE BY LINES - PLAN "E"
Maximum Number of Scheduled Units Shown

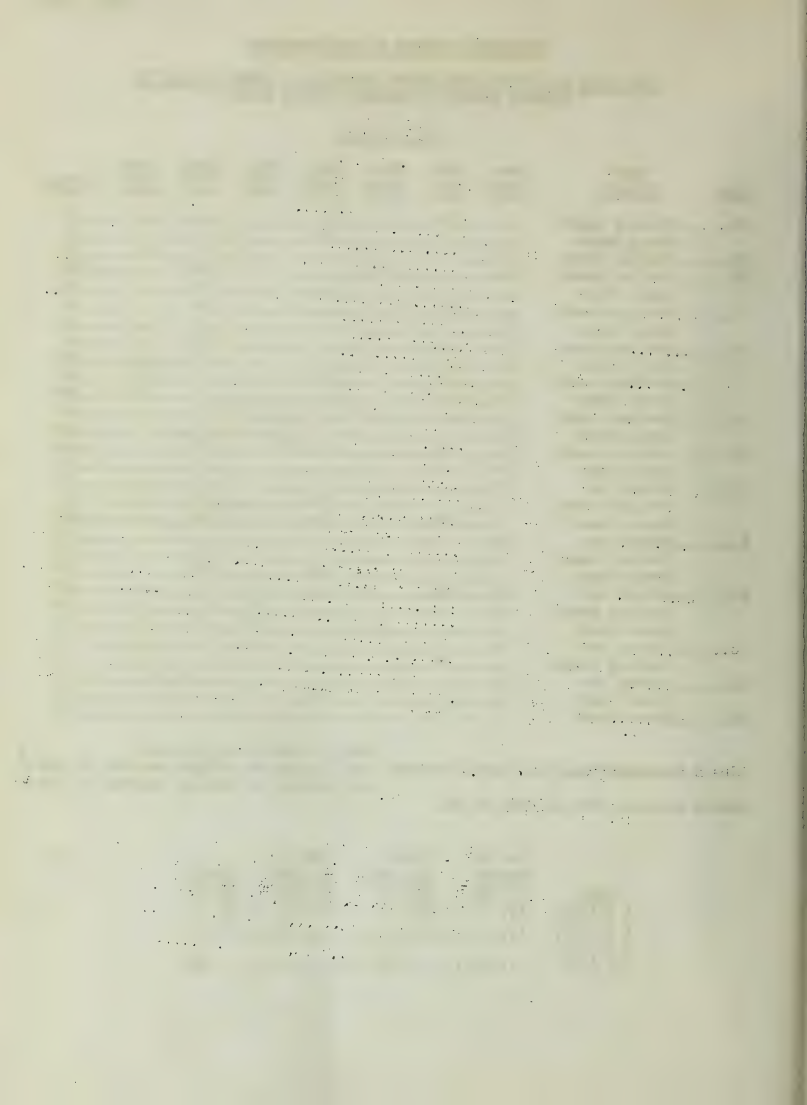
TIME SCHEDULE

Line	Type Vehicle	Jan. 1949	July 1949	Dec. 1949	Jan. 1950	May 1950	June 1950	Sept. 1950	TOTAL
22	Trolley Coach	33	31	21					85
	Motor Coach		2	10					12
33	Trolley Coach	11							11
41	Trolley Coach	34		43			29		106
	Motor Coach				14				14
5	Trolley Coach		33				22		55
	Motor Coach	33					11		44
6	Trolley Coach		16				11		27
	Motor Coach	16				5			21
7	Trolley Coach		20					25	45
	Motor Coach	38	25				13		76
9	Trolley Coach			42					42
	Motor Coach	42							42
21	Trolley Coach		26				17		43
	Motor Coach	26				9			35
1,2,3,C	Street Car	59							59
	Trolley Coach				50		60		110
	Motor Coach	5	90		40		30		165
F	Street Car	36							36
	Trolley Coach						33		33
	Motor Coach				50		17		67
H	Street Car	28	24						52
	Trolley Coach						30		30
	Motor Coach				49		15		64
8	Street Car	9							9
	Trolley Coach		22						22
31	Street Car	22							22
	Motor Coach				14				14
25	Motor Coach	7	13		6				26

Line D Abandoned Dec, 1949. To be prorated (Add 4 street cars to Line B)
(Add 4 motor or trolley coaches to Line H)
(Add 9 motor or trolley coaches to Line E)

Line B Increase from 24 cars to 28.

Date	No. of Market SC	No. of Market MB	Market to Army SC	Market to Army MB	Army to So. End SC	Army to So. End MB	Total SC	Total MB
1 /16/49	13		11		4		28	
7 / 1/49) 7 /11/49)	13		11		6		24	6
12/ 1/49			24		25		49	



Municipal Railway of San Francisco

ACCIDENT STATISTICS

During Fiscal Year Ending June 30, 1948

MILES PER ACCIDENT

Operation	Miles	Traffic	Passenger	Other	Employees	Total
Street Car	15,530,556	4,220	6,780	12,780	-	2,160
Trolley Coach	1,331,994	4,460	13,200	29,600	-	2,995
Motor Coach	11,767,885	7,700	18,650	79,400	-	5,090
Cable Car	436,424	1,120	3,210	7,270	-	745

PASSENGERS PER ACCIDENT

Operation	Miles	Traffic	Passenger	Other	Employees	Total
Street Car	203,258,635	55,200	88,700	167,000	-	28,200
Trolley Coach	10,937,393	36,600	108,200	243,000	-	24,590
Motor Coach	83,885,668	54,900	133,000	566,000	-	36,300
Cable Car	9,893,350	25,300	72,600	164,500	-	16,850

NUMBER OF ACCIDENTS

Operation	Traffic	Passenger	Other	Employees	Total
Street Car	3,689	2,292	1,219	-	7,200
Trolley Coach	299	101	45	-	445
Motor Coach	1,529	630	148	-	2,307
Cable Car	390	136	60	-	586

ACCIDENT STATISTICS - MONTH OF OCTOBER, 1948

	Hours	Hours Per Accident	Miles	Miles Per Accident
MOTOR COACH				
Utah	68,595		614,605	
Ocean	31,702		364,978	
McAllister	43,299		411,959	
Total	143,596	381	1,391,542	3,700
STREET CARS				
Geneva	22,944		225,564	
Geary	21,487		175,583	
Sutro	18,771		157,764	
Potrero	49,682		457,907	
Total	112,884	250	1,016,818	2,254
CABLE CARS	7,017	163	37,378	869
TROLLEY COACHES	12,761	354	121,018	3,361
TOTAL	276,258	304	2,566,756	2,830

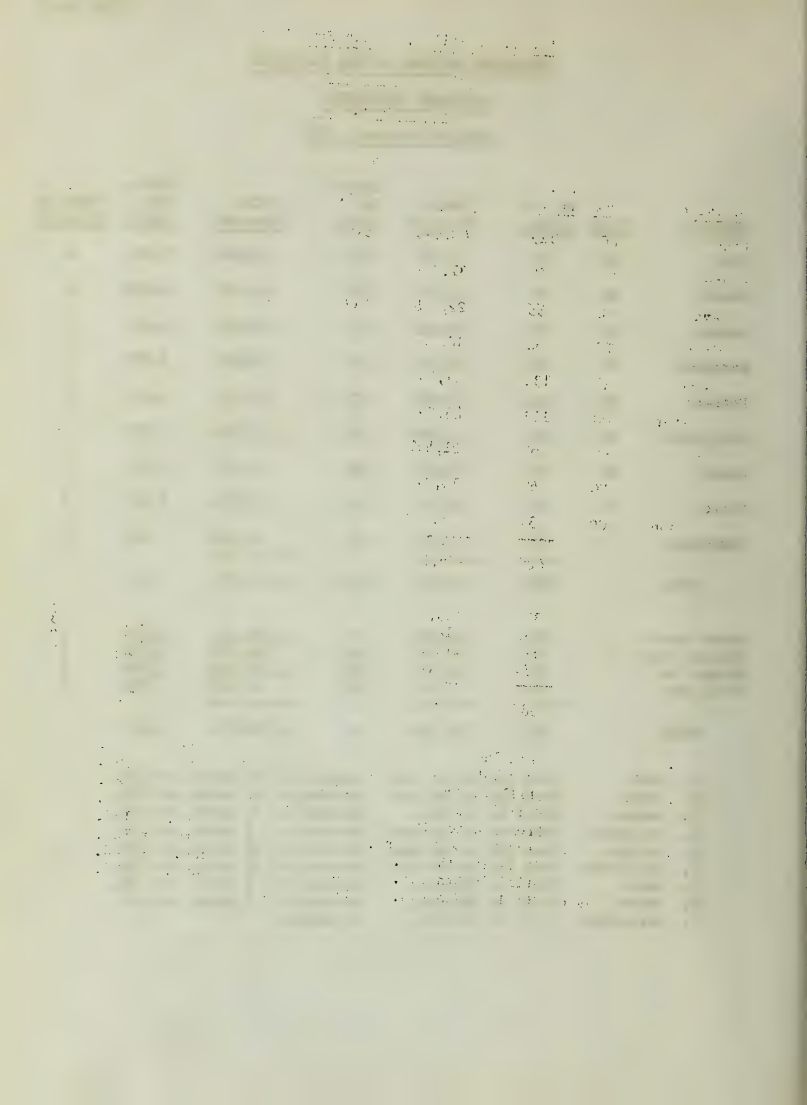
Municipal Railway of San Francisco

ACCIDENT STATISTICS

Month of October, 1948

Division	Type	No. of Acdts.	Hours Operated	Hours Per Acdt.	Miles Operated	Miles Per Acdt.	Rank in Sept.'48
Utah	MC	119	68,595	576	614,605	5,165	2
Ocean	MC	60	31,702	528	364,978	6,083	1
Geneva	EC	55	22,944	417	225,564	4,101	3
Mariposa	TC	34	12,761	375	121,018	3,559	6
Potrero	EC	134	49,682	371	457,907	3,417	4
McAllister	MC	122	43,299	355	411,959	3,377	5
Geary	EC	62	21,487	347	175,583	2,831	7
Sutro	EC	60	18,771	313	157,764	2,629	8
Wash-Mason	CC	39	7,017	180	37,378	958	9
TOTAL		685	276,258	403	2,566,756	3,747	
Motor Coach		301	143,596	477	1,391,542	4,623	1
Trolley Coach		34	12,761	375	121,018	3,559	3
Street Car		311	112,884	363	1,016,818	3,269	2
Cable Car		39	7,017	180	37,378	958	4
TOTAL		685	276,258	403	2,566,756	3,747	

1.	Utah	From 2nd to 1st psn.	Decrease of 15 acdts. or 11%.
2.	Ocean	From 1st to 2nd psn.	Increase of 16 acdts. or 36%.
3.	Geneva	Still in 3rd psn.	Increase of 10 acdts. or 22%.
4.	Mariposa	From 6th to 4th psn.	Decrease of 2 acdts. or 6%.
5.	Potrero	From 4th to 5th psn.	Increase of 14 acdts. or 12%.
6.	McAllister	From 5th to 6th psn.	Increase of 15 acdts. or 14%.
7.	Geary	Still in 7th psn.	Increase of 1 acct. or 2%.
8.	Sutro	Still in 8th psn.	Decrease of 7 acdts. or 10%.
9.	Wash-Mason	Still in 9th psn.	No change.



Municipal Railway of San Francisco

ACCIDENT CLASSIFICATION

OCTOBER, 1948

Ref. No.	Classification of Accident	Street Car	Motor Coaches	Trackless Trolley	Cable Cars
11	Collision with Person	8	6	-	2
13	Collision with own Buses and/or Cars	6	3	1	-
14	Collision with other Motor Vehicles	193	203	26	24
15	Collision with fixed objects	-	4	-	-
16	Collision with other objects, Bicycles, etc.	1	4	-	-
17	Derailments, switch occurrences	-	-	-	2
	TOTAL TRAFFIC ACCIDENTS	208	220	27	28
31	Boarding Moving car	33	1	-	-
32	Boarding - Caught and/or struck by door	2	10	-	-
33	Boarding - trips, slips, stumbles, etc.	5	8	-	-
36	Alighting from moving car	10	1	-	6
37	Alighting - Caught and/or struck by door	3	19	1	-
38	Alighting - Trips, slips, stumbles, etc.	17	21	2	2
41	Occurrences on Board - Thrown, fell, etc.	33	76	6	3
42	Occurrences on Board - Other injuries	21	11	-	2
43	In between cars or buses	-	-	-	-
	TOTAL PASSENGER ACCIDENTS	124	147	9	13
51	Falling from car	10	6	-	2
52	Employee accidents	81*	-	-	-
53	Broken windows	28	4	-	-
	TOTAL OTHER ACCIDENTS	119	10	-	2
	GRAND TOTAL BY TYPE OF VEHICLE	451	377	36	43

*All employee accidents for this month charged to Street Cars, instead of the type of equipment operated by the employee reporting the accident.

Municipal Railway of San Francisco
ACCIDENTS OCCURRING DURING FISCAL YEAR ENDING JUNE 30, 1948

TYPE OF ACCIDENT	NUMBER OF ACCIDENTS Total	Street Car	Trol. Coach	Motor Coach	Cable Car	PASSENGERS PER ACCIDENT Street Car	Trolley Coach	Motor Coach	Cable Car
TRAFFIC									
Collisions with Persons	252	166	16	64	6				
Deaths	14	12	-	1	1				
Collisions with own coaches and cars	151	117	1	28	5				
Collisions with other motor vehicles	5,325	3,302	273	1,379	371				
Collisions with fixed objects	44	5	6	32	1				
Collisions with other objects	54	24	3	26	1				
Derailments - switch occurrences	60	54	-	-	6				
Caught in between cars	21	21	-	-	-				
Total Traffic Accidents	7,395	3,689	299	1,529	390	55,000	36,600	65,000	25,300
PASSENGER									
Boarding moving car or coach	660	637	-	3	20				
Boarding, caught or struck by door	57	14	5	38	-				
Boarding, trips, slips, stumbles, etc.	204	164	4	30	6				
Alighting moving car or coach	338	299	2	6	31				
Alighting caught or struck by doors	104	6	14	84	-				
Alighting, trips, slips, stumbles, etc.	288	174	15	88	11				
On board, thrown, fell, slipped	1,098	678	43	324	53				
On board, - other injuries	410	320	18	57	15				
Total Passenger Accidents	3,159	2,292	101	630	136	887,500	108,100	133,000	72,750
OTHER									
Wearing apparel, fainting, misc.	684	556	30	68	30				
Broken windows	514	486	5	14	9				
Unusual occurrence reports	274	177	10	66	21				
Total Other Accidents	1,472	1,219	45	148	60	166,500	243,000	566,000	164,500
Total	10,538	7,200	445	2,307	586	28,200	24,600	36,250	16,850
Employee Accidents	964								
Total Accidents	11,502	7,200	445	2,307	586				

St. Car Miles 15,530,556 Trolley Coach Miles 1,331,994 Motor Coach Miles 11,767,885 Cable Car Miles 436,424
St. Car Pass. 203,258,635 Trolley Coach Pass. 10,937,393 Motor Coach Pass. 83,885,668 Cable Car Pass. 9,893,350

TABLE XLI

Municipal Railway of San Francisco

TREND OF ACCIDENTS AND COSTS

Fiscal Years- 1928 - 1948

Fiscal Year Ending	Personal Injuries	Property Damage	Salaries & Wages	Misc. & Hospital	City Attorney	Total Cost	Percent of Operating Revenue	No. of Accidents	No. of Claims	No.of Suits	Claims Adjusted
1928	$ 87,234	$ 7,555	$ 15,385	$ 8,807	$ 4,200	$ 123,181	3.52	3,304	570	56	398
1929	70,891	7,529	13,575	9,698	4,200	105,893	3.00	3,314	831	64	418
1930	69,758	3,560	13,782	12,084	4,200	103,384	2.89	3,245	845	75	338
1931	94,102	4,096	12,867	11,089	4,200	126,354	3.67	2,997	814	75	345
1932	70,983	2,670	10,452	7,979	4,200	96,284	3.00	3,349	596	39	325
1933	30,191	2,446	9,346	11,692	4,200	57,875	2.05	3,021	393	57	273
1934	54,520	3,175	10,034	11,357	3,000	82,086	2.88	3,055	466	73	281
1935	48,156	3,050	10,883	8,855	6,000	76,944	2.53	2,999	473	65	205
1936	45,115	3,050	12,956	9,903	7,200	78,224	2.52	3,317	589	62	328
1937	53,226	4,183	15,017	12,899	10,000	95,325	3.01	3,612	694	66	376
1938	58,943	4,396	15,221	9,815	10,000	98,375	2.83	4,074	860	73	511
1939	72,269	7,221	15,920	16,645	10,000	122,055	2.95	5,093	1,133	115	686
1940	109,233	6,149	17,738	19,621	11,286	164,027	3.92	4,801	1,217	116	721
1941	73,434	6,706	17,565	13,679	10,600	121,984	2.97	4,344	869	124	599
1942	106,337	8,392	21,365	17,685	10,600	164,379	3.79	4,620	1,102	101	711
1943	120,451	10,098	23,727	17,858	10,600	182,734	3.25	5,520	1,144	113	802
1944	190,697	17,191	26,764	11,807	15,520	261,979	3.90	6,245	1,661	185	1,018
1945	362,811	60,099	59,953	49,733	44,342	582,001*	3.83	13,464	3,561	392	2,149
1946	683,044	153,096	77,030	89,704	58,910	1,056,996*	6.03	16,127	4,593	517	4,010
1947	1,113,810	110,242	115,024	74,215	92,260	1,531,548*	8.04	13,869	4,135	400	3,069
1948	912,007	88,597	124,722	80,642	95,740	1,361,856*	7.43	11,502	3,386	330	2,935
July 1,1948 to March 1, 1949	-	-	-	-	-	988,567*	8.30	6,644	2,579	249	2,063

* Includes Cost of excess liability insurance.

TABLE XIIX

Municipal Railway of San Francisco

STATUS AS OF MARCH 15, 1949 OF ACCIDENTS OCCURRING IN OCTOBER, 1948
75 DAYS AFTER EXPIRATION DATE FOR FILING CLAIMS AGAINST CITY

	Item	Street Car	Motor Coach	Cable Car	Trolley Coach	Total or Average
1.	Number of Accidents	451	377	43	36	907
2.	Claims Filed	121	165	20	16	322
3.	Claims - Percent of Accidents	26.8	43.7	46.5	44.4	35.5
4.	Settlements Made	95	129	13	11	248
5.	Settlements - Percent of Claims	78.5	78.2	65.0	68.8	77.0
6.	Number of Suits Pending	2	10	1	-	13
7.	Percent Suits to Claims Filed	1.6	6.0	5.0	-	4.0
8.	Number of Claims Pending	24	26	6	5	61
9.	Claims Pending - % Total Claims	19.9	15.8	30.0	31.2	19.0
10.	Amount of Suits Pending	$ 36,054.63	$ 474,895.00	$ 51,344.73	-	$ 562,294.36
11.	Amount of Pending Claims	47,843.37	160,949.95	2,315.74	$47,895.20	259,004.26
12.	Amount of Paid Settlements	5,683.31	14,369.55	949.78	354.49	21,357.13
13.	Average Amount of Suits Pending	18,027.31	47,489.50	51,344.73	-	43,253.41
14.	Average Amount of Claims Settlement	59.82	111.40	73.06	32.32	86.11
15.	Average Amount of Unsettled Claims	1,993.49	6,190.38	385.96	9,579.04	4,246.00
16.	Number of Damage Claims for Repair of Municipal Railway	25	20	3	2	50
17.	Amount Collected to Date on Claims	$428.23	$625.70	$33.24	-	$1,087.17
18.	Amount Uncollected to Date	$384.44	$902.66	$16.25	$30.10	$1,333.45

COST OF CLAIMS DEPARTMENT - OCTOBER, 1948

Salaries	$11,202.44
Medical, Car & Misc. Exp.	7,143.89
City Attorney's Office	8,237.58
Total Cost	$26,583.91

TABLE XLIII

Municipal Railway of San Francisco

STATUS OF ACTIVE CLAIMS AND SUITS AS OF DECEMBER 31, 1948

	Prior to 1946		1946-47		1947-48		1948-49		Total 12/1/48	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Total Claims Dec. 1, 1948	10	$4,205.92	274	$ 45,185.29	344	$1,002,884.50	396	$1,953,744.91	1024	$3,006,020.62
Filed at Claims Bureau							245	51,080.50	245	51,080.50
Filed at City Hall					2	10,685.00	71	582,764.39	73	593,449.39
Old Claims Reinstated					2	10,435.00			2	10,435.00
Dismissed on Sect. 87							3	10,906.72	3	10,906.72
To Suit	1	200.00			6	26,135.00	13	431,876.00	20	458,211.00
Denied			13	886.92	56	60,854.28	33	15,831.14	102	77,572.34
Settled			7	161.00	15	60,994.82	234	129,274.84	256	190,430.66
Total Claims and Amount on Dec. 31, 1948	9	4,005.92	254	44,137.37	271	876,020.40	429	1,999,701.10	963	2,923,864.79
Claims Removed from Register - Dec. 1948	1	200.00	20	1,047.92	77	147,984.10	283	587,888.70	381	737,120.72
New and Reinstated Claims December 1948					4	21,120.00	316	633,844.89	320	654,964.89
Total Suits Dec. 1, 1948	236	3,203,501.57	184	3,991,500.36	202	3,639,928.77	33	910,078.51	655	11,745,009.21
Filed	1	244.86			6	76,881.35	12	407,716.00	19	484,842.21
Dismissed	5	89,179.25	1	11,000.00					6	100,179.25
Settled	6	130,916.80	8	133,798.20	5	63,750.05			19	328,465.05
Total Suits Dec. 31, 1948	226	2,983,650.38	175	3,846,702.16	203	3,653,060.07	45	1,317,794.51	649	11,801,207.12
Suits Disposed of December, 1948	11	220,096.05	9	144,798.20	5	63,750.05			25	428,644.30
New Suits Dec. 1948	1	244.86			6	76,881.35	12	407,716.00	19	484,842.21

TABLE XLIV

Municipal Railway of San Francisco

ELECTRICAL SUB-STATIONS

Station	Total Capacity K W	POWER UNITS Number	Type	Capacity KW-Each	D.C. Volts	A. C. Cycle	Make	First Installed	(c) Owned By
OWNED BY RAILWAY									
Bryant Street	7,500	5	Motor Gen.	1,500	600	60	Gen. Elec.	1910	P.G. & E. (d)
Turk Street	7,500	5	Motor Gen.	1,500	600	60	Gen. Elec.	1910	P.G. & E.
Geneva Avenue	4,500	3	Motor Gen.	1,500	600	60	Gen. Elec.	1910	P.G. & E.
(b)Millbrae	2,500	2	Motor Gen.	500	600	60	Gen. Elec.	1910	P.G. & E.
		1	Motor Gen.	1,500	600	60	Gen. Elec.	1910	P.G. & E.
Downtown	7,000	2	Syn. Conv.	2,000	600	60	West.	1921	Municipal
		1	Syn. Conv.	3,000	600	60	West.	1924	Municipal
Eighth Avenue	4,250	1	Syn. Conv.	1,500	600	60	Gen. Elec.	1915	Municipal
		1	Syn. Conv.	(a) 1,500	600	60	Gen. Elec.	1914	Municipal
		1	Syn. Conv.	2,000	600	60	Gen. Elec.	1924	Municipal
TOTAL	33,250								

(a) At present this machine can only be operated at 1/2 capacity account of lack of transformer capacity.
(b) Abandoned in January, 1949, with abandonment of street car line to San Mateo.
(c) Machines of P.G. & E. Co. are loaned at "no charge" to Railway.
(d) Includes one owned by Municipal.

Sta.	Machines No.	Cap.	Type		Location
OWNED BY P. G. & E. CO.					
C	2	100	KW	R.C.	Stevenson between 3rd & 4th St.
E	2	1,000	KW	M.G.	19th and Lexington Streets.
F	2	1,000	KW	M.G.	Buchanan and Beach Streets.
G	2	1,000	KW	M.G.	Broderick and Ellis Streets
	1	500	KW	M.G.	
I	1	1,500	KW	R.C.	8th St. between Mission & Minna Sts.
	2	1,000	KW	R.C.	
J	1	1,000	KW	R.C.	Sacramento & Leidesdorff Streets
K	2	1,000	KW	M.G.	24th Avenue and Balboa Street.
N	2	1,500	KW	R.C.	9th Avenue between Judah & Kirkham
TOTAL		16,200	KW		

TABLE XIV